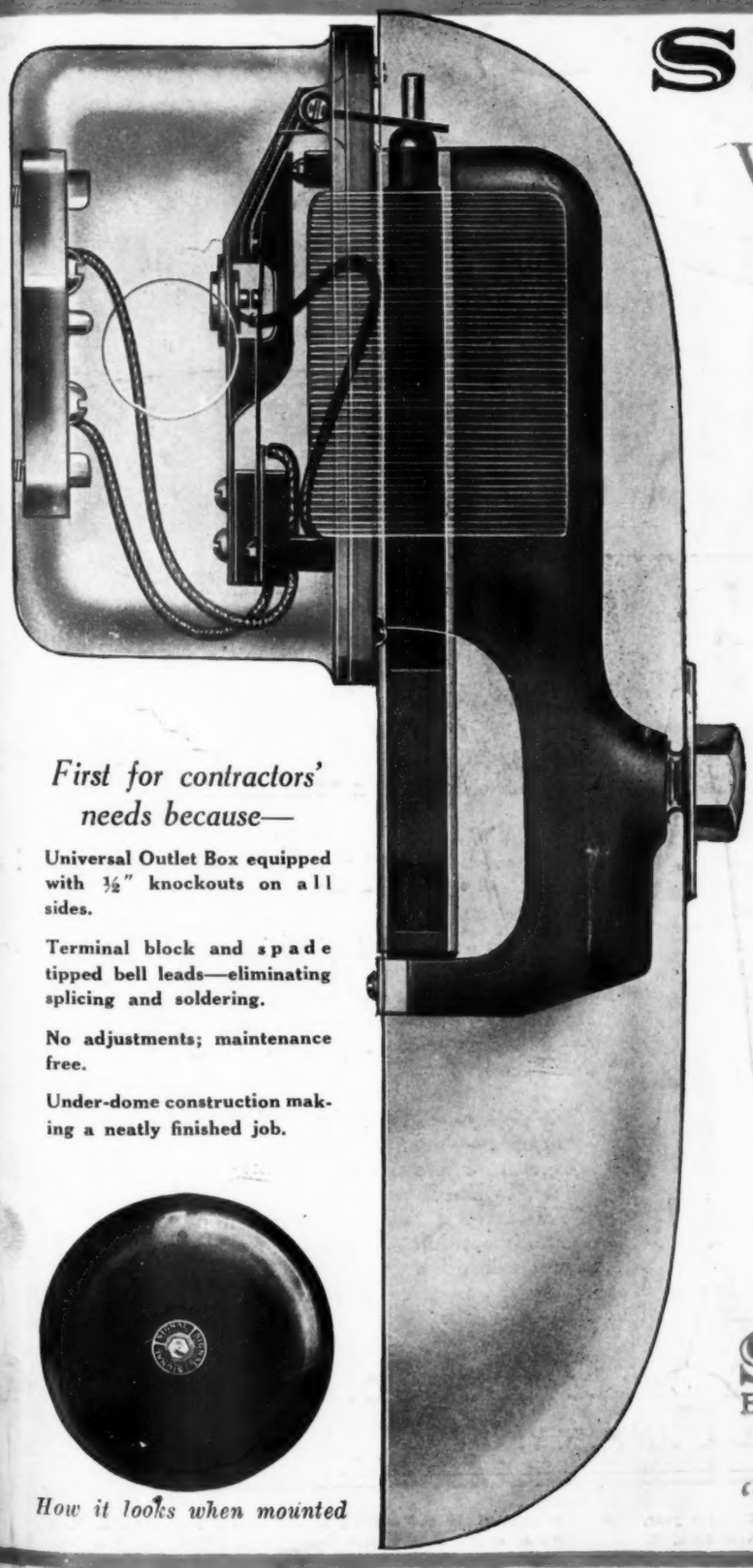
The Electragist

TRADE MARK REG. U.S. PAT. OFFICE

Vol. 24, No. 12 — Association of Electragists INTERNATIONAL — OCTOBER, 1925



First for contractors' needs because—

Universal Outlet Box equipped with ½" knockouts on all sides.

Terminal block and spade tipped bell leads—eliminating splicing and soldering.

No adjustments; maintenance free.

Under-dome construction making a neatly finished job.

How it looks when mounted

SIGNAL

Vibrating Gong

HERE is a man-sized "sample" of a great gong—one of the products that received such favorable attention at our exhibit at the Electragists' Convention at West Baden last month.

"Signal" Gongs stand supreme for never-failing, trouble-free, "no adjustment" service; and they give a penetrating but pleasant ring exclusively "their own."

Furnished for inside use and weather-proof in both vibrating and single stroke; wound to operate on any voltage; A.C. or D.C.

Guaranteed to give satisfaction. Prices and further information will be furnished by your jobber.

Other "Signal Products"

—Signal Call Paging System.
—Fire Alarm Systems.
—A. C. Duplex Horns.
—Power and Telephone Extension Relays, etc.

Write for Bulletins giving complete information.

SIGNAL
ENGINEERING & MFG. CO.
537 Canal St., New York, N. Y.

"Everything for Signalling"

Ettco

"Ettco for Mine"

"Ettco for Mine"—a familiar phrase that is finding favor with contractors everywhere. For good contractors are rapidly realizing that there is a difference in cable and loom and that it pays to ask for it by name.

Ettco Armored Cable, Flexible Steel Conduit and Non-Metallic Conduit are products that form the basis of wiring work. If the cable or loom you use isn't good, the job **can't** be good. Remember that the next time you are buying.

When you ask for Ettco you get in-built, proven, demonstrated quality. And you get MORE. You get service that gives you what you want when you want it and a Square Deal that stands back of every transaction —a policy that is part of every Ettco coil.

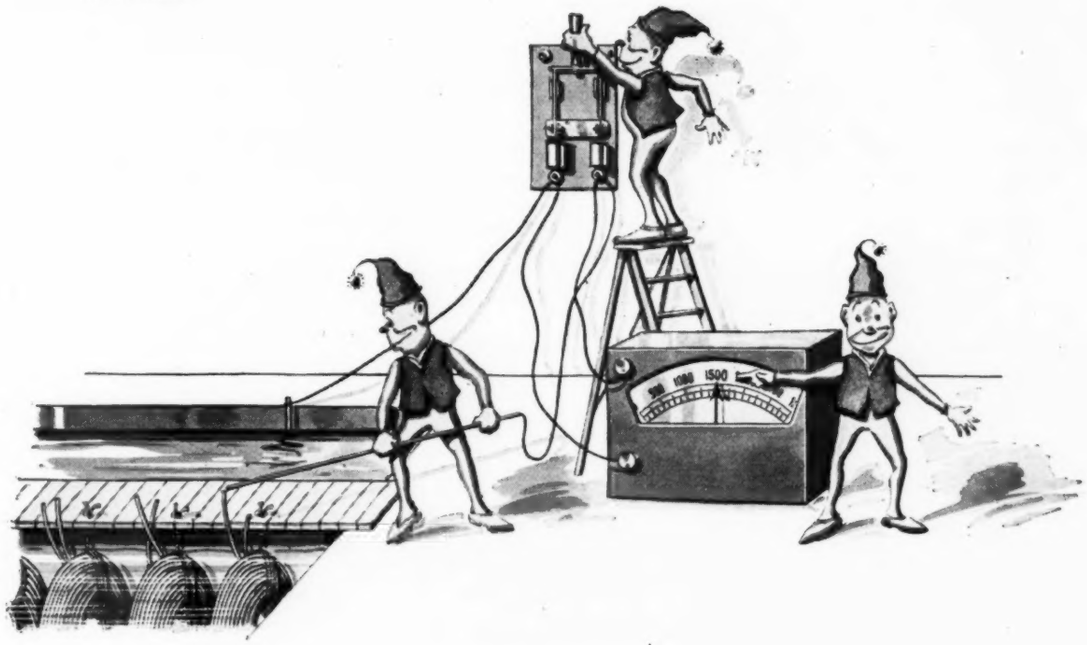
This policy—plus products of greatest quality—are reasons why careful contractors are saying "Ettco for Mine," when buying armored cable, flexible steel conduit and non-metallic conduit. If you are not yet using this good "buy-word," get it going the next time your jobber's salesman calls.

Eastern Tube & Tool Co.

BROOKLYN, N. Y.

THE ELECTRAGIST, October, 1925, Vol. 24, No. 12, $2.00 per year, 20 cents a copy. Published monthly at 100 Liberty Street, Utica, N. Y. Association of Electragists—International, 15 West 37th St., New York, N. Y. Entered as second class matter September 1, 1919, at the Post Office at Utica, N. Y., under the act of March 3, 1879.

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES
Trade Mark



No Current Breaks Through This Insulation

The insulation of "U. S." Paracore Wire thwarts the well-known wanderlust of electric current. It takes a bold ampere to rush the armed guard of high grade rubber and impregnated braid which keeps watch on every side. When the road to the rock-pile lies along "U. S." Paracore, there are few breaks from the ranks before these frisky electric prisoners have done their work and marched back to their cells.

The code requirement on insulation resistance is 1,500 megohms insulation resistance. Current doesn't break through this extra-stiff resistance even when the wire is in contact with moisture for many hours.

Contractors can put in "U. S." Paracore under the most adverse conditions and expect—and get—full delivery of current.

United States Rubber Company

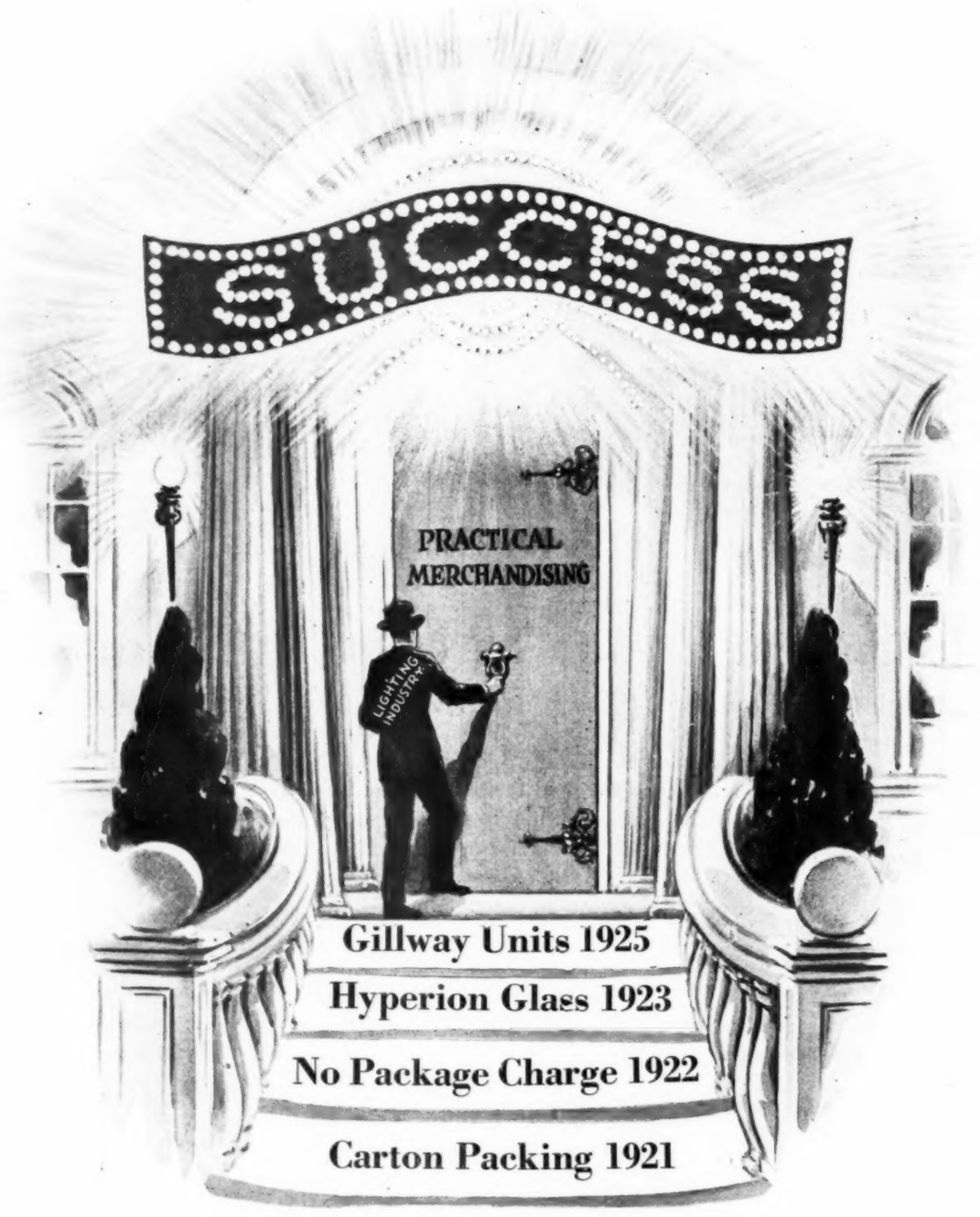
1790 Broadway, New York City

COMPLETE STOCKS CARRIED IN THE FOLLOWING CITIES

Atlanta	Cincinnati	Indianapolis	Philadelphia	Seattle
Baltimore	Cleveland	Kansas City	Pittsburgh	Spokane
Birmingham	Columbus	Minneapolis	Portland, Ore.	St. Louis
Boston	Denver	New Orleans	Rochester	Syracuse
Buffalo	Detroit	New York	Salt Lake City	Toledo
Chicago	Houston	Omaha	San Francisco	

Also makers of "U. S." Paracore Wires and Cables

The Final Step—



Gill Glass Company, Inc.

Amber and Venango Sts., Philadelphia, Pa.

Announcing Gillway Units to the Lighting Industry

BUY YOUR UNITS—GILLWAY

FOR FIFTY YEARS, we have been manufacturers of illuminating glassware. In that half century of commercial endeavor, we have tried to make our organization highly sensitive, and promptly responsive to the needs of the Lighting Industry. We were the *first to pack illuminating glassware in corrugated cartons*—in consequence, the breakage problem was solved. We were the *first manufacturers of illuminating glassware to eliminate the package charge*—with the consequent removal of a fruitful source of serious annoyance. Sensing the need of a more efficient auxiliary for the modern high powered lamp, our investigating and experimenting chemists finally developed *HYPERION GLASS*—the most efficient lighting glass now on the market.

Today, a new demand has arisen and we meet it by offering to the Lighting Industry—GILLWAY UNITS.

WHAT ARE GILLWAY UNITS?

A Gillway Unit is lighting equipment—glassware and fixture—assembled, wired, packed in an individual carton, ready to install. In other words, it is possible to purchase from us lighting glassware, only, as before—or commercial and residential lighting equipment, each unit in its own carton as one thing.

WHAT DO GILLWAY UNITS MEAN FOR THE LIGHTING INDUSTRY?

They mean the concentration of the necessary sources of supply for lighting equipment from many into one. Lighting equipment may now be purchased in one place, as one thing, not built up from many things secured from many sources.

THEY MEAN THE ELIMINATION OF COSTLY SHOP LABOR AND BROKEN STOCKS.

THEY MEAN ECONOMY OF TIME AND MONEY.

THEY MEAN A PRACTICAL, EFFICIENT, ECONOMICAL SERVICE IN LIGHTING EQUIPMENT TO THE LIGHTING INDUSTRY.

THEY MEAN GILLWAY IS THE BEST WAY!

Send for our artistic and attractive catalogue "A," done in colors, illustrating a complete and varied line of residential and commercial GILLWAY UNITS, complete with glassware and fixture.

"THE GILLWAY IS THE HIGHWAY TO SUCCESS."

Gillway Units Dept. of the Gill Glass Company, Inc.

Amber and Venango Streets, Philadelphia, Pa.

OFFICES:

17 N. Wabash Avenue, Chicago, Ill.

200 Fifth Avenue, New York City

301 Tchoupitoulas Street, New Orleans, La.

1940 Blake Street, Denver, Colo.

122 W. Baltimore Street, Baltimore, Md.

Textile Bldg., 660 Mission Street, San Francisco, Cal.

Quality lands more

THE SATURDAY EVENING POST 77

Know you are getting *quality wiring*

If you are planning electrical wiring, ask your electrical contractor for the illustrated book, "The Home of a Hundred Comforts."

Merchandise Division
General Electric Company
Bridgeport, Conn.

Know the kind of wiring that goes into the walls of your house. The wiring installation should be planned *complete* right at the start, and should last as long as the building stands. It will last, if every switch and outlet and length of wire or cable is of highest quality. To be *sure*, specify General Electric wiring materials from start to finish.

General Electric earns its fame for quality in such colossal achievements as the development and building of the world's largest generators. And every smallest product of General Electric is made with the same precision, to do as unfailing a job, and to uphold a world-wide reputation. You may know nothing about the cable, the insulated wire, and conduit—about the switches outlets built into your walls. But you know much the dependability of General Electric. Therefore upon a G-E Wiring System *throughout!*

WIRING SYST

—for lifetime se

GENERAL ELECTRI

No. 8
of a two-color series in the Saturday Evening Post
7,000,000 will see it!

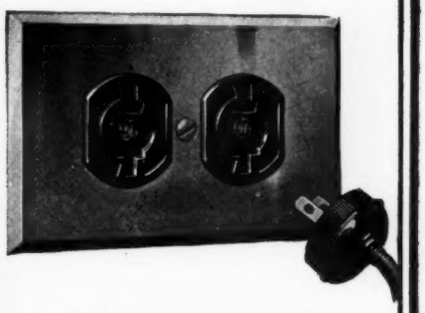
GENERAL

MERCHANDISE DIVISION

contracts than *price*

IF one contractor presents a low price bid—skimping as much on the profit as on the plan—and if another contractor offers a G-E Wiring System, with adequate planning and with G-E wiring materials throughout—which bid will land the job? Contractors everywhere are finding that when they show their customers that they are offering greater economy as well as greater comfort, they can land the job at fair price and full profit.

The G-E Wiring System campaign in the Post is making people understand the importance of quality wiring. The G-E booklets—which every contractor can get—often make the customer want more outlets, and help sell the quality idea. People will listen today, when you talk quality wiring. They want a first-class wiring job, and they are willing to pay for it. Specify "G-E Wiring System," and get your price.



Here are points of quality in G-E convenience outlets:

The body is one inch deep, permitting its use in shallow boxes in thin partitions, yet allowing ample wiring room.

It has long binding screws, so that wires can be looped easily.

It has strength. The parts are of heavy gauge metal and high grade compound.

Wide mounting ears resting on the plaster automatically align the outlet to take the flush plate.

G-E WIRING SYSTEM
—for lifetime service

ELECTRIC

BRIDGEPORT, CONNECTICUT

SNAP SWITCHES

35 Years with the Current of Popularity

YOUR old original all-purpose switch—it is still the all-purpose switch.

Before Tumbler switches, before Push-Button switches, the H & H "Snap" carried the current to pioneer wiring jobs.

Many a veteran leader in the trade, started with an installation of these switches. And his work of that day still speaks for his work of this!

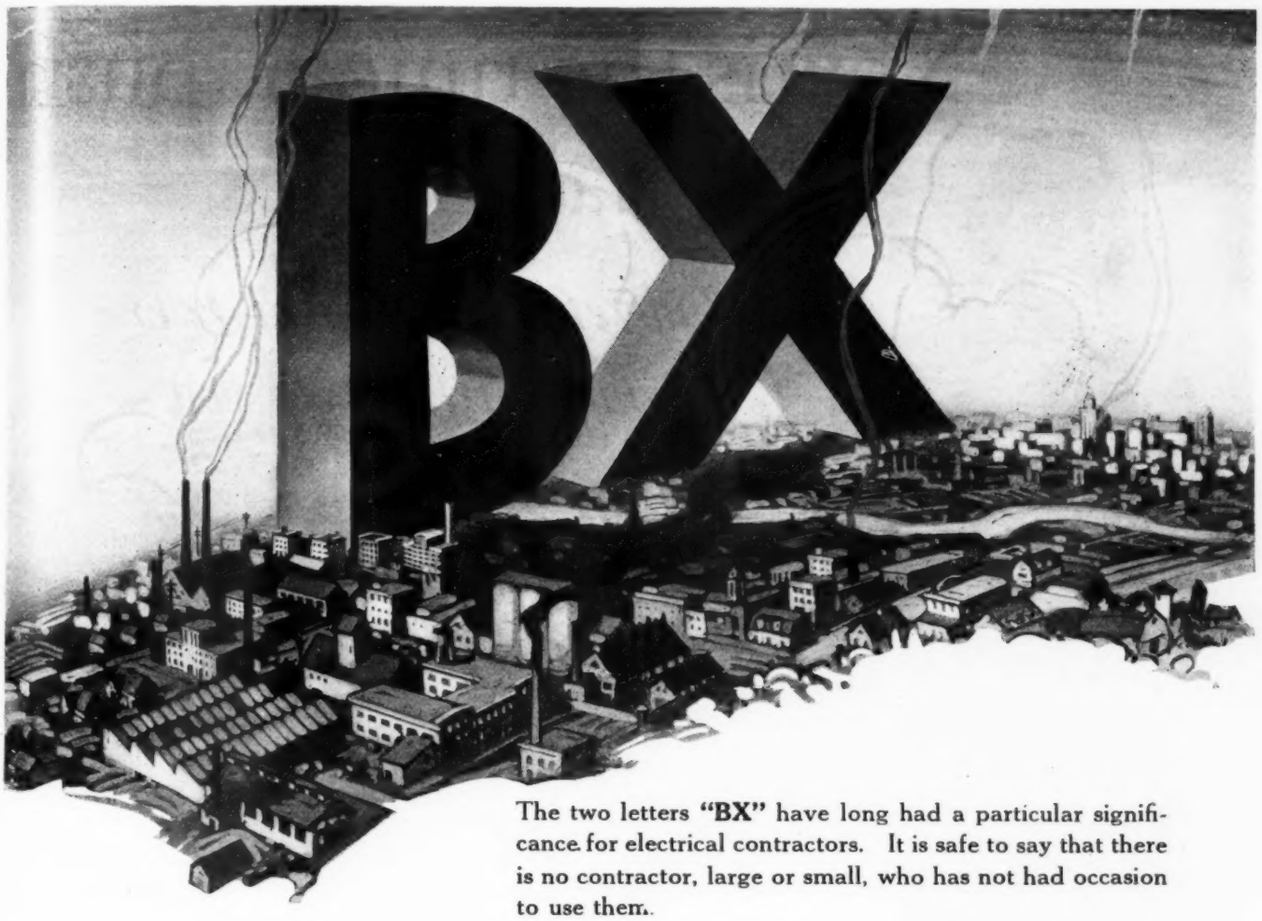
FOR surface wiring, the H&H "Snap" is the standby it always was. For cottages, bungalows, garages, out-buildings—from playground pavilions to factory buildings—*it lasts.*

On "old work" or new, always in style; positive in action; permanent in supporting your work.

Made in all sizes for lighting circuits, and for modern control of heating and power units in industrial use.

Tumbler Switches of surface type are a later development for all-round use like the Snap Switch. In surface wiring, or concealed—*any* place you meet a *switch* problem—turn to H&H *Catalogue "R."*

THE HART & HEGEMAN MFG. CO.
HARTFORD, CONN.



The two letters **"BX"** have long had a particular significance for electrical contractors. It is safe to say that there is no contractor, large or small, who has not had occasion to use them.

"BX," which is the trade name of the flexible armored conductors manufactured by the General Electric Company, has always been and is today a basic product for wiring work—material that must be used in many different types of installations.

So general has become the use of **"BX"** and so widespread its popularity that in some quarters the idea has gained ground that ALL flexible conductors are **"BX"**—an idea that is far from a fact.

One flexible armored conductor is **"BX"**—and there is no other. It is a General Electric Product, the first on the market and the first in the minds of contractors who use only the best.

There are two sure ways of seeing that you get the REAL **"BX.":** One is to look for and FIND the letters **"BX"** stamped at frequent intervals on the armor; the other is to watch for the distinctive orange and blue label on the coil.

"BX"—a trade mark of a G. E. Product.

46-110—Oct.

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL LARGE CITIES

Now is the time to push lamp sales

And get the Edison MAZDA Lamp Girl to help you

THIS is the month to push your lamp sales to the limit. And the Edison Girl is your friend indeed. Put her in your window and impress on people's minds that your store is the place to buy lamps.

And when they come in for lamps, you'll sell them other things, too.

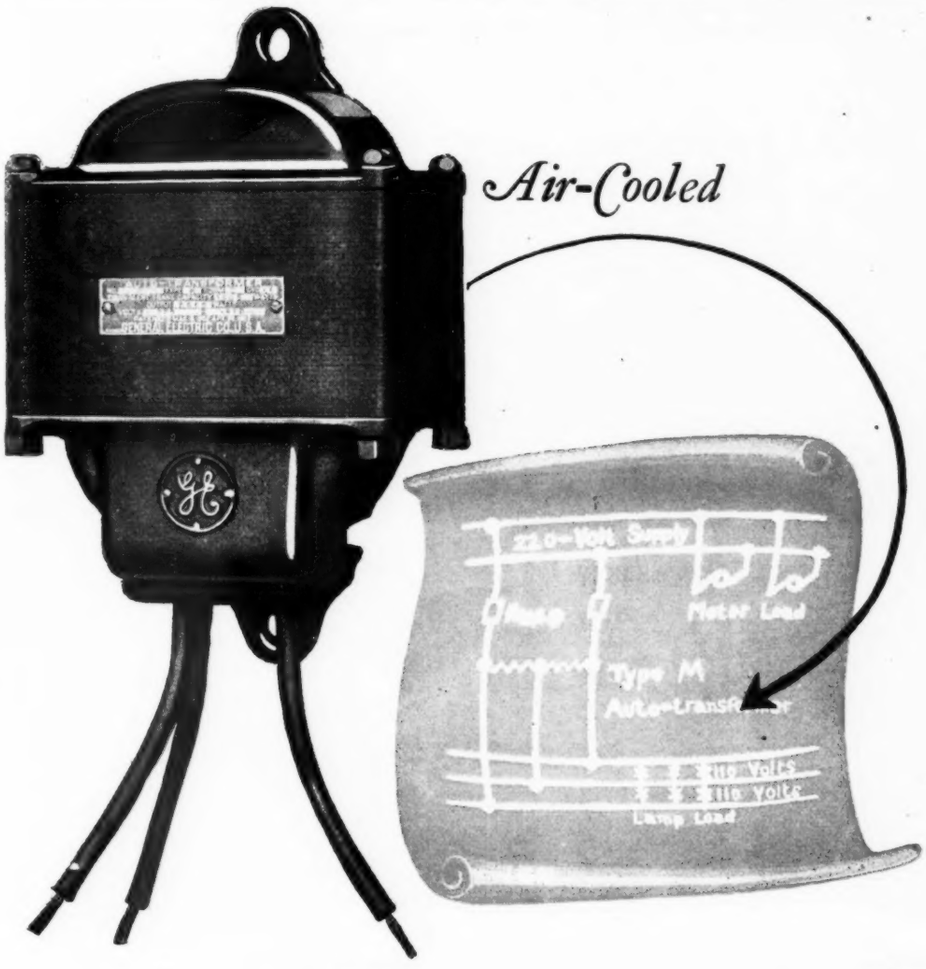
The Edison Girl is one of the best-known young women in the country. She is in thousands of windows, and millions of people have seen her and know her.

The life-size cardboard cutout of the Edison Girl is the centerpiece of the new Fall window display. For a good many years she has been helping Edison MAZDA Lamp Agents to build their sales by establishing contact on the one item that is bought most frequently.

To get her help, write to our nearest district office, or communicate direct with the Edison Lamp Works of General Electric Company, Harrison, N.J.

EDISON MAZDA LAMPS

A GENERAL ELECTRIC PRODUCT



Air-Cooled

Power *and* Light
at 220 volts at 110 volts

110-volt lighting from 220-volt power circuits is a practice followed by many plants. They use G-E Auto-transformers to effect the voltage change, as this is the simplest and most economical method.

These Auto-transformers are built in standard sizes of 1 to 10 kv-a., 60 cycles, and 1 to 5 kv-a., 25 cycles.

The outstanding characteristic of Type M Transformers is that they are *air-cooled,* utilizing no oil in their construction. This makes them ideal for indoor use. Bulletin 65105 gives all details as to ratings and dimensions. Ask for a copy.

Type M Transformers and Auto-transformers are admirably adapted to many other low-voltage needs, including 3-phase to 2-phase transformations.

They are ideal for *special* low-voltage requirements as well, because "specials" can readily be built from standardized "M" parts.

They are attractive in appearance, and their construction is such that they may be mounted indoors or outdoors as desired. They can also be furnished for conduit wiring installations.

Tell the nearest G-E Office what you wish to accomplish.

17F-4

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL LARGE CITIES

MIAMI
BILTMORE

LOS ANGELES
BILTMORE

ATLANTA
BILTMORE

SCHULTZE & WEAVER
Architects

CLYDE R. PLACE
Electrical Engineers

In keeping with the high standards exemplified in the Bowman Hotels, architectural and engineering genius have here created monumental structures embodying the ultimate in craftsmanship.

A-A Wire and Cable Used Exclusively.

A-A WIRE CO., Inc.

110 EAST 42d ST. NEW YORK CITY

The Electragist

(The National Electrical Contractor and The Electrical Contractor-Dealer)

Official Journal of the
Association of Electragists—International

Vol. 24 OCTOBER, 1925 No. 12

Twenty-fifth Breaks All Records

In point of attendance, record of accomplishment, sincerity of purpose and genuine enthusiasm 1925 Convention at West Baden sets high standard for future annual meetings.

WHEN President Joseph A. Fowler opened the twenty-fifth annual convention of the Association of Electragists, International, at West Baden Springs Hotel, West Baden, Ind., on September 23 he faced the largest gathering that has ever participated in an annual meeting of the Association. Nor was it complete, for succeeding days brought new delegations from nearby cities.

Delegates were present from Arkansas, California, Colorado, District of Columbia, Florida, Illinois, Indiana, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Wisconsin and Canada.

The influence of the convention, however, will extend far beyond the attendance at West Baden, for many delegates were sent by their local association with instructions to secure a complete report for presentation to their next meeting.

In addition to the usual resolutions at the close of the Convention and the one on trade practice (see Page 22) the Convention passed three very important resolutions which will be found below.

The one on "All-Metal" was passed to obviate any misunderstanding that "All-Metal" might of necessity mean all-conduit.

The manner in which proposed changes in the Code to permit the use

RESOLUTIONS

Passed at the Twenty-fifth Annual A. E. I. Convention

WHEREAS the proposed changes in wiring methods in the National Electrical Code to permit the use of multiple assemblies of non-metallic sheathed cables has been handled by the Electrical Committee during the past year in an irregular manner, and

WHEREAS the Electrical Code is now an American standard through its approval by the American Engineering Standards Committee, and

WHEREAS all revisions of the Electrical Code should be handled under orderly procedure which will meet the requirements of the A. E. S. C.

Therefore Be It,

RESOLVED, That the Executive Committee of this Association goes on record as opposed to any revisions in the National Electrical Code which do not follow proper Rules of Procedure in accord with the rules of the A. E. S. C.; and furthermore be it

RESOLVED, That this Association discountenances any effort to introduce changes in the National Electrical Code until such changes have been approved by the A. E. S. C. as American Standards.

* * * *

BE IT RESOLVED, That in the development of our campaign for All-Metal wiring installations, this Association recognizes the need for economical construction and the suitability and desirability of flexible metal armored cable as a satisfactory material for certain classes of work.

* * * *

WHEREAS, This Association has recently learned of an effort by certain local unions of electrical workers to enforce the use of union-made and labelled lighting fixtures, and

WHEREAS, Such action is against the best interests of the industry, being a restriction of trade, and is without justification under the law, and

WHEREAS, The Associated Manufacturers of Lighting Fixtures, by resolution, have determined not to so label their products;

BE IT RESOLVED, That this Association records itself as opposed to this effort of the unions to restrict installations to union-made lighting fixtures, or other materials.

AND BE IT FURTHER RESOLVED, That the officers of this Association be instructed to refer this entire matter to the United States Department of Justice.

AND BE IT FURTHER RESOLVED, That a copy of this resolution be sent to the President of the International Brotherhood of Electrical Workers.

Official Photograph Showing Exhibits and About Half of Those Who Atten

of multiple assemblies of non-metallic sheathed cables has been handled brought forth a sharp protest from the Convention in a resolution discountenancing changes until they have been approved by the American Engineering Standards Committee.

A third resolution instructed the officers of the Association to refer to the United States Department of Justice efforts made by certain local unions to enforce the use of union made and labelled lighting fixtures and other materials.

One of the interesting and welcome innovations this year was the local delegation from several places some with arm bands, others with badges, all organized to vie with each other in letting the convention know they were on the job. Evansville, Ind, declared an electrical holiday and every place of electrical business closed so that fifty-five contractors and wiremen could participate in the proceedings. The Chicago Master Electrical Contractors' Association were out in strong numbers and each evening entertained those in the dining room with group singing. Other large delegations came from Canada, St. Louis, Louisville, Detroit, New Orleans, Cleveland and Rochester where the Requa Electrical Supply Company had acted as banker in keeping the weekly savings of members deposited so they could attend the Convention.

The Winnipeg association raised funds to send W. A. Straith, manager of the Western Elevator and Motor Company, by airplane. Unfortunately, as Mr. Straith explained to the convention, conditions were encountered which caused the flight to be abandoned after the plane had gone some distance over the border into Wisconsin.

In his opening address President Fowler sketched briefly the activities of the Association during the past year, thanked the manufacturers and jobbers who had rendered assistance and then in a few simple yet strong and forceful paragraphs, which will be found elsewhere in this issue, issued what virtually amounted to a challenge to those who would lower American standards of wiring, to those who were responsible for the lack of standards in wiring supplies, to those who sell their customers' customer, to the contractor who is a jobber for purposes of buying and competition.

The keynote of the convention—Give Service to the Public—was sounded by Governor J. H. Trumbull at the opening session. Consciously or unconsciously the members and others repeatedly returned to the theme of "Sell your job, don't buy it. Use quality materials and give the public a really adequate job of wiring."

The Governor after emphasizing building the industry by the Quality Route spoke of his political activities in Connecticut wherein he showed that good business principles are necessary in affairs of state.

Governor Trumbull was fittingly introduced by E. McCleary, of Detroit, Executive Committeeman and one of the charter members of the Association. The two men first became acquainted twenty-five years ago that very day, when the Trumbulls were fighting hard to put their infant manufacturing company on a firm footing.

Since the Executive Committee stated the Association's Trade Policy last spring President Fowler has appeared before the Electrical Supply Jobbers' Association and both the Westinghouse and General Electric Agent Jobbers' Associations vigorously expounding the policy and pointing out to the jobbers in a very frank fashion their position with relation to that policy. At the opening session of the Convention O. Fred Rost, president, Newark (N. J.) Electrical Supply Company and a prominent member of the Jobbers' Association, spoke with equal frankness of the relation of the contractor and dealer to the entire problem of distribution. An abstract will be found on Page 21.

That the dealer also bears a responsibility to the public and to the industry in selling the electrical idea was the theme of a most interesting address by Martin L. Pierce, director of research of The Hoover Company. Mr. Pierce pointed out that the appliance

Several Sessions of the 1925 Convention at West Baden, Ind.

saturation is less today than it was ten years ago, indicating the necessity for greater efforts by some one.

Unusual emphasis was placed this year on Code matters. The inspector, the Code and the Uniform Electrical Ordinance were the three approaches to the subject.

William S. Boyd, secretary and treasurer of the Western Association of Electrical Inspectors, Chicago, in a most carefully prepared and able address told the Convention what the electrical inspector stands for and why, if he is to work most efficiently, he must have the full cooperation of the other branches of the electrical industry in maintaining high standards of electrical installation. He deplored efforts made to lower existing standards, but at the same time made a strong plea against efforts to abandon knob and tube work because of its value in the "tall grass" districts where the architect and builder have to act as inspectors.

The Uniform Electrical Ordinance was assigned to H B. Kirkland of the Society for Electrical Development, who was to speak for the Electrical Manufacturers' Council. He was unable to be present, but he had supplied his associate, Kenneth MacIntyre, with his notes. The Uniform Ordinance has attracted widespread attention and has been most favorably received. During the summer months local governing bodies are seldom active so that little progress that is tangible has been made. This fall, however, will see great local ordinance activity and the Uniform Ordinance is expected to be accepted by a very large number of cities.

W. J. Canada, new electrical field secretary, National Electrical Fire Prevention Association, prepared a paper entitled "The Code—Past and Future," but illness prevented him from personally presenting it. It was read by Mr. Davis and will be found on Page 27.

The progress of the Red Seal Plan was outlined by Kenneth MacIntyre of the Society for Electrical Development. A list of cities was read off in which the Plan is under way, or negotiations are in progress, or interest has been manifested and it was a most impressive list.

At the close of the second session the first presentation was made under the James H. McGraw award. Earl E. Whitehorne, commercial editor Electrical World, acted for Mr. McGraw. A number of contributions were presented for consideration, but in the opinion of the judges none fully qualified for the medal. Four contributions, however, were outstanding and for each of them a certificate of honorable mention was presented, the purse of one hundred dollars in gold being equally divided among the four.

The four certificates and citations were as follows:

A. Penn Denton, president and chief engineer, Denton Engineering and Construction Company, Kansas City, Mo.:

". . . . Through his conception of the idea of Local Code Committees to standardize wiring practice within communities and the great service he has rendered through long and persistent effort in effecting their organization in many cities."

Robert A. Goeller, vice president, Hatzel & Buehler, Inc., New York City:

". . . . Through his conception of the idea of a Cross Index and Guide to the National Electrical Code, which by exhaustive study, and labor, he compiled and published."

Walter H. Tavener, president Walter H. Tavener Corporation, New York City:

". . . . Through his conception of the application of graphic charts to current cost keeping on labor for electrical construction."

William J. Ball, manager Tri-City Electric Company, Moline, Ill.:

". . . . Through his conception of the idea of a co-operative sale to clear dead stock from the shelves of contractors and dealers, such sales to be held apart from any dealer's store, thus liquidating frozen stocks and quickening turnover without introducing the disturbance of cut prices into established electric shops."

The judges were L. K. Comstock, James R. Strong, W. Creighton Peet, Louis Kalischer and Earl E. Whithorne.

A new policy was introduced by the Association this year in holding the afternoon session each day for only those in the contractor and dealer business, none others being permitted to attend these sessions. The officers felt that it was only in such sessions that the most free expression could be secured.

At the first executive session the Trade Policy Committee made its report which will be found elsewhere in this issue. It was well received and the comments were mostly along the lines of the report culminating in the resolution on Page 22.

This was followed by a conference of those interested in local Code Committees, at which time the Code Committee report was presented.

The two Labor sections held their annual meetings which resulted in a recommendation presented the next day to amend the constitution and by-laws so that "50 per cent. of the dues of members in Classifications D, E, F, G, H, I and J, in excess of $35.00, may, on the request of any such member, be allocated to the Labor Section to which the member belongs, to be used for the solution of labor problems."

The amendment carried and it was explained that while the amount involved was not large, that it would undoubtedly result in the Association's gaining a number of new members among the larger contractors.

The Cost Data Committee, of which J. H. Schumacher is chairman, staged a most constructive meeting in the use of the Manual of Estimating.

C. J. Geisbush, secretary of the California Electragists (Southern Division), showed by means of charts and wiring diagrams how simple the Manual is to use. He used the same method he has been so successfully using to educate the Southern California Electragists in the use of the Manual.

Arthur L. Abbott, technical director of the Association, presented some detailed figures on two jobs to show how close the Manual is borne out by actual costs records, one of a job in California and the other in Canada.

A conference of state and local association secretaries was another innovation this year. It was agreed that greater good would come from more cooperation between local groups and it was decided to exchange all local bulletins. Considerable attention was also paid to ordinances and how the local bodies can better function in that connection.

The Convention was graced by a large number of ladies, for whom various forms of entertainment was provided. Wednesday and Thursday afternoons were given over to bridge and Five Hundred, at which the prizes were won by Mrs. Robert Dederich of Cincinnati, O.; Mrs. H. Garvin of Erie, Pa.; Mrs. Norton of Los Angeles, Cal., and Mrs. Edward R. Bateman of Washington, D. C.

Each evening was filled with entertainment arranged for by the Glad Hand Committee. The first night was given over to a costume ball and the second to a playlet entitled "The Ins and Outs of an Outlet" by Mr. and Mrs. Walter J. Collins of Chicago and to an original minstrel show staged and acted by the Glad Hand Committee. Friday night was reserved for the light and power men who were holding a convention of the Indiana Association and the Great Lakes Division, N. E. L. A., a mile away at French Lick.

Field sports of a most unusual nature were scheduled for Friday afternoon by the Glad Hand Committee.

The Glad Hand Committee has come to be an institution at Electragists' Conventions. Led each year by Samuel A. Chase, Mansfield, Ohio, they line up as follows: T. H. Hatfield, Indianapolis; T. H. Bibber, Chicago; J. Walter Collins, Chicago; Hugo Tollner, Brooklyn; N. L. Walker, Raleigh, N. C.; J. J. Caddigan, Boston, and Charles E. (Jesse) James, Ft. Pierce, Fla. One other member is Charles M. Beltzhoover of Cincinnati, whose wife suddenly passed away a few hours before the Convention opened. Suitable resolutions and flowers accompanied the body back home.

To this committee, all of whom are officers, there being no privates, the Convention is indebted for entertainment, order and the prompt starting of sessions.

And so on Friday, September 26, the big Twenty-fifth came to a close after it had been decided to return again in 1926 to West Baden.

The Convention was a day shorter than in past years, but through concentration and earnestness of purpose more was accomplished than ever before.

The Costume Ball Held in the Atrium of the Hotel on the First Night of the Convention

President Fowler's Message

A Challenge

If jobbers and manufacturers believe contractors and dealers to be logical and most important outlet and admit purposes and achievements of Association they ought to support its educational funds.

It is un-economic to expect trade from a customer whose customers you sell.

Nation-wide trial installations of unapproved materials is dangerous in principle which if allowed to become a policy will destroy the value and perhaps existence of N. F. P. A. Electrical Committee.

Surely the makers of reliable merchandise can depend upon their reputation for quality without having to resort to un-economic and questionable catch-penny novelties where construction necessities are concerned.

Joseph A. Fowler, President Association of Electragists, International

THOUGHTLESS individuals have stated that our membership of 2,000 was not representative because the Industry supported 25,000 contractors and retailers. As a matter of fact, less than 10,000 established contractors have been revealed through our investigations. Our purchasing strength of more than $75,000,000 of merchandise annually and the fact that the thought and standards of the entire classification is influenced by our activities is evidence of our representation.

The Association of Electragists, International, is educating electrical contractors and retailers to become Electragists. We are maintaining and developing safety construction standards and bringing about a better understanding of proper trade relations. As such we deserve, not only the endorsement but, the financial support of manufacturers and distributors of electrical merchandise.

If electrical manufacturers and distributors wish to convince us that they believe the electrical contractor and retailer is the logical and can be made the most important outlet for their products then it is pardonable if we analyze their attitude by the extent of their cooperation in the solution of the problems which we consider have industry importance.

Certainly we should pay grateful tribute to those who recognize our Association for what it is—the only organization representing our classification and the most outstanding group,

in the industry, when judged on the basis of unselfish service rendered to its clientele. If our purpose and achievements are admitted, certainly it is reasonable to expect that manufacturers will willingly become our associate members with substantial contributions to our educational funds and distributors will lend their organizations to increase our membership and disseminate our educational data.

We have already had concrete evidence of material support along such lines and will fittingly acknowledge the same at another time. During the coming months we will extend the opportunity to all of those we have reason to believe are interested in our ideals.

Trade Policy

THE successful development of a Trade Policy will obtain in direct proportion to the economic soundness of its principles. We contend that it is un-economic to expect trade from a customer whose customer you sell. We believe most emphatically in the necessity for an orderly process of distribution. We recognize that, in a business with the diversification of the electrical industry, a buyer may be our customer for most of his needs and yet by-pass one or more of the parties in the distribution chain for certain of his requirements without destroying the practicability of the Trade Policy. The fair-minded Electragist will apply the rule of reason.

The honest to goodness Electragist hasn't any more respect for the electrical contractor who is a jobber for buying and competition purposes, than he has for the jobber who fills in his off peak with business that belongs to his customer.

All Metal

OUR campaign for the adoption of "All-Metal" construction requirements in congested communities has been one of the astonishing developments in the electrical industry. The determination to promote such a program originated two years ago at Washington. Our convention last year established a goal of twenty-five "All-Metal" cities for 1925. You will be happy to learn that we have now passed the forty mark and I confidently expect this meeting to name fifty as its objective for 1926.

Concurrently with our campaign for "All-Metal" wiring standards and ultimately for an "All-Metal" code there has been a vigorous effort to secure approval of non-metallic multiple assemblies, official adoption of which would be regarded by many as a lowering of the present inadequate safety requirements of the National Electrical Code.

Permission to make nation-wide trial installations of wiring materials which have not been sanctioned under the National Code is dangerous in principle and if allowed to become a policy will destroy the value and perhaps the existence of the Electrical Committee of the N. F. P. A.

Standards

THE wasteful nature of certain of our manufacturing methods seems to be the natural result of the orgy of competition for which the electrical business is notorious. A new wiring device is introduced and immediately the different device makers set about contriving a fancy dress for the particular item they are producing, evidently with the intention of appealing to the fatuous ambition of many contractors and consumers who think distinction comes from variety. Such a policy may be fine sport but it is expensive. Witness, for example, the tumbler switch travesty for which contractors and the public are already beginning to pay for through the nose.

Surely the makers of reliable merchandise can depend upon their reputation for quality without having to resort to un-economic and questionable catch-penny novelties where construction necessities are concerned.

A proof of our un-organized state is evident from the long suffering manner in which we have accepted the wasteful necessity of duplicate pipe and fitting stocks. Is it possible for the conduit manufacturers to rescue the trade from this farce or is there method in their madness? It is estimated that an enormous sum of money is tied up in the stock of distributors and contractors because of this comedy of errors.

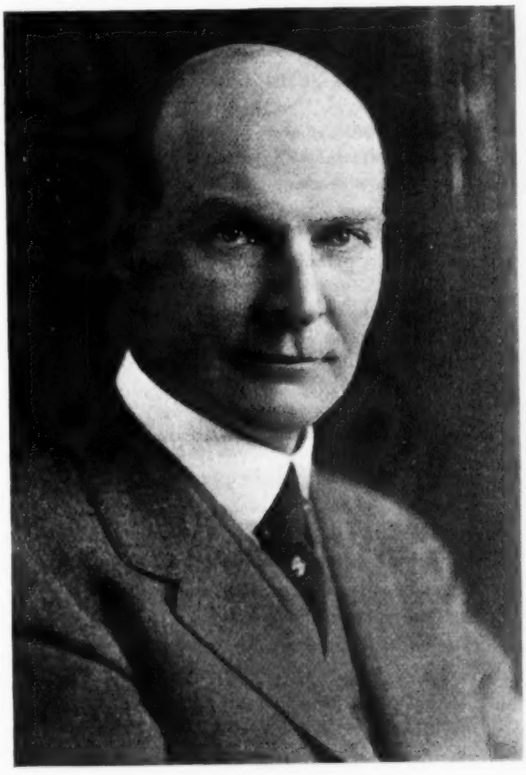
The Strategic Position and Duties of the Electragist*

By J. H. TRUMBULL
Governor of Connecticut, President The Trumbull Electric Manufacturing Company, Former Electrical Contractor

DURING my twenty-five years of business and political experiences I have had occasion to observe various types of people, and various characteristics of humanity, and I have come to the conclusion that if a man has it in him, it is going to come out, whether he is a college graduate, or whatever he may be.

This country of ours offers the greatest opportunity of any country in the world. Any man who starts out with ambition, honesty and integrity, and will work and apply himself, will find that there is no limit to the height that he may attain in business, politics, government, or anything else. The world is before him, and it is his opportunity to make good.

I recall one of the early things that occurred in our business. We started out with practically no manufacturing experience, we had no money, and had very few friends, if any, to start with, and it was our idea that we could go out and compete with other manufacturers. I recall, very vividly, coming back from one of my trips, when I had been trying to sell in competition with some of the other manufacturers, and I told my brother that if we were going to meet their prices, there apparently was no profit in the game. I remember my associates and I sitting down in a very serious conference, and trying to determine on one of two policies, and we said, "Now, if we attempt to meet every device that comes out, on a price basis, we are not going to be able to do it; we are not clever enough to beat everybody in the game. The only other road left for us is to establish a quality basis and work to it," and we adopted that policy, and have stuck to it ever since.



J. H. Trumbull

We have never attempted to compete on a price basis, because, after all, price is not competition—it is ruination.

The contracting fraternity, I am glad to see, has also adopted a Trade Policy.

The business is nothing like what it was twenty-five years ago. You gentlemen are engaged in a legitimate business, and you are entitled to recognition, and a profit, and the people that you serve are entitled to the best quality of workmanship that you can perform, and the best quality of material with which you can supply them. And it is your duty to do it.

A new house is to be erected, and it is going to be wired. That house is not being put up just for the purpose of allowing you gentlemen to wire it. That house will require electrical equipment. Now, the only way we can increase the electrical business materially, is to put more material into buildings. I haven't very much respect or use for a man who goes out and acquires a job by cutting the price, but I admire the man who goes out and gets a job on a quality basis, on the service he renders and the material he puts in. The public expects that, and they are ready to pay for it. The public doesn't want a cheap job. It wants a house well equipped, and properly wired, and up to date. It is your duty, as electrical contractors and Electragists, to put that across, because you gentlemen are really, after all, the point of contact, you are the ones who come mostly in touch with the consuming public.

The better type of distributor does his duty in backing you up, and it is also the duty of the better type of manufacturer, in turn, to back up the distributors.

There is a place for these three factors—the manufacturer, the distributor and the contractor—in the electrical industry, and I believe that you appreciate that fact.

It is also necessary that we all work in harmony, with the one thought in mind—to give to the public better lighting, better equipment and better service, and I am pleased to say that that is going on increasingly.

The evolution in the electrical business today is wonderful, and you gentlemen, here, and members of this organization, are entitled to a great deal of credit. The manufacturers and distributors appreciate that fact, and they are willing to meet you more than half way, in backing you up and putting the message across.

Now, it seems a long step from the position of an electrical contractor to the Governor's chair of one of the sovereign States of this Union. Perhaps it is. Yet, after you have arrived, it seems a very practical proposition, and you

*Abstract of address by Governor Trumbull before the 25th Annual Convention of the Association of Electragists, International, at West Baden, Indiana, September 23, 1925.

simply turn to and handle it as you would any other business proposition.

I find that this position calls for a tremendous amount of work, but I am trying to discharge my duties the same as I do in my own business.

But the work is intensely interesting, and the more I observe it, the thought comes to me that we, as citizens, are sadly neglecting our duty in not taking an interest in public affairs. You men, here, are, perhaps, not interested in politics. You may be in the same position that I was in, in 1914. But is is up to men of your type, men of your ability, to apply your business experience in State affairs, just as much as it is to apply your abilities in your own business. In fact, I think that perhaps your duty to the State is first, because you have got to have law and order and protection, and all those things, in order to allow your business to exist. If you fail to take an active part in the affairs of State, and let the type of people go into office that generally do go in, and mismanagement occurs, and mistakes in government are made, and expenses exceed the income of the State, it is due to your attitude. I don't care whether you are a Democrat or a Republican, I say it is up to you to do your part, and not leave it to George. Otherwise, you have no kick coming.

We have, in this country, one of the finest forms of government that has ever been established in the history of the world, and this country is progressing more rapidly than any other nation of the earth. We have made progress beyond all bounds. It has never been equalled.

Must Train Youth

Now, if we are going to continue that progress, we have got to train our young people up to be loyal American citizens, because it is the only thing that is going to keep up that progress, and if we neglect it ourselves, and take no interest in it, we will wake up some day and find that our business won't be worth much.

I have the greatest respect for the American flag, and all that it stands for, and I am going to do my part, even though I have to make sacrifices to maintain that flag.

I claim that no man should seek any political office of any kind, unless he is seeking it for the purpose of putting into it more than he possibly can take out. The great trouble with a great many of those in office, today, is that they are seeking political jobs for personal gain, or to gratify their political ambitions. They should only be in there for the service that they can render their fellow citizens, and any man who is holding a political office without that view of it is a detriment to the State or National government, and ought to be kicked right out. We have people who are willing to go in and do those jobs, right in our own State, and I am proud to say that our State government today, in every department, is free from graft, and, as far as I know, there is not a dishonest man holding office. If there is, I hope that he will be brought to my attention.

The great trouble is that these professional office seekers are the kind of people who have failed in every other line of endeavor. It seems to me that that procedure ought to be reversed, if we are going to run our State and National government successfully. We have got to have successful men in office before we can expect success in the conduct of the Government. The same principle applies to your own organization. You should put into your business the kind of men who are willing to put more into it than they can get out, and any man in your organization who is not doing that, is not doing his duty by your organization. It is not an organization to promote their personal gain, or ambition.

In the selection of your officers, for your organizations, you ought to select the high type of men of which I have spoken. That can be done as well in your business as in National and State governments.

I think the electrical industry today is beginning to appreciate the high business standards that are being adopted year by year.

As I have said before, in this three-cornered arrangement, composed of the electrical contractor group, the distributing group and the manufacturing group, they should all put their shoulders to the wheel to work for only one common purpose, and that is the betterment of the industry in every way possible, with the object of giving to the public better service for its money. In doing that you will be helping yourselves.

Every time you make a cut price and put in inferior material, you are hurting the electrical industry. You should establish a high quality of service and material, and stick to it, because in doing that you are rendering a service to the industry, and if you do otherwise, you will be tearing it down.

The Public is Willing to Pay

We are all interested in seeing our industry built up. It is one of the youngest, large industries in the country, and its history for the past twenty-five years is such that it creates a growing curve. It will continue growing as long as we put the impetus into it by encouraging high business principles and good service. The people are willing to pay for a high class of service, if it is thoroughly explained to them. We go out and buy clothes and shoes. We don't go out to buy cut price stuff. We buy the best we can. And it is the cheapest in the end.

My message to this Convention is to put your star up high, and aim to reach it; increase the quality of the material you put in, increase the quality of your service, and sell your jobs to the public.

I think you gentlemen here today can be of more service to the electrical industry, if you apply those principles, than any other branch of the industry.

Let us all pull together, and we shall ultimately find that we have raised the entire electrical industry to a higher plane.

THE TRUMBULL PHILOSOPHY

Price is not competition—it is ruination.

I haven't very much respect for a man who goes out and acquires a job by cutting the price, but I admire the man who goes out and gets a job on a quality basis, on the service he renders, and the materials he puts in.

The public doesn't want a cheap job.

Give the public better service for its money.

Establish a high quality of service and material.

The electrical industry will continue growing as long as we put the impetus into it by encouraging high business principles and good service.

Put your star high and aim to reach it. increase the quality of the material you put in, increase the quality of your service and SELL your jobs to the public.

Your Trade Policy in Practice*

By O. FRED ROST
President, Newark (N. J.) Electrical Supply Company

HOW far is the contractor-dealer able to carry out a trade policy such as your Association has laid down?

I speak to you as a jobber whose problem is to get goods to the consumer in the most economical and efficient way. In making an analysis, such as I shall, we must be fair—admit faults and give praise where due.

The number of fair and square contractor-dealers is on the increase and I give full credit to your Association in building the number of these men who are trying to do a business like job.

The measure of a man in business is his credit.

I have taken the credit rating of members from the standard rating agencies and find that the results are better than they were five years ago, when I made a similar study, by about 50 per cent. There is a marked increase in the number who pay their bills and are doing a good job. The ratings are as follows:

Those enjoying high credit rating, who pay their bills promptly and who do not make unjust claims, 7½ per cent.

Those enjoying good credit rating, prompt in pay and not unjust in making claims, 12 per cent.

Those not in above classes, including those not rated at all, 80½ per cent.

There are 3,500 electrical manufacturers, 680 electrical supply jobbers, not including those handling lighting fixtures only, and 24,300 contractor-dealers. The number of the latter is fairly sufficient, but numbers alone are not satisfactory.

If we take the average financial investment of contractor-dealers as $1,000 we arrive at a figure of $24,300,000 for the entire contractor-dealer industry.

The aggregate invested capital of the electrical supply jobbers is $100,000,000.

*Abstracted from address before 25th Annual Convention, Association of Electragists, International, West Baden, Ind., Sept. 23-25, 1925.

"UNLESS you are willing to make up to the jobber for the business he will lose by this policy he will not not lose it long. You must provide a substitute for the business you want him to lose, because he won't go out of business just to please you."

The value of manufactured electrical goods is $833,000,000. The aggregate volume of jobbers is $573,000,000.

If the contractor-dealer turns his investment over an average of six times a year this aggregate volume of this group would be $144,000,000, of which approximately half is labor, leaving $72,000,000 for merchandise and material. And under your trade policy this is all the jobber is to receive and therein lies the reason why you are being bypassed.

Your trade policy is logical and an ideal condition, but before you condemn the manufacturer and the jobber look at these figures and then figure out how you can help.

The contractor-dealer business must grow, but unless you are wishing to make up to the jobber for the business he will lose by this policy he will not lose it long. You must provide a substitute for the business you want him to lose because he won't go out of business just to please you.

The jobbers should get their largest volume of business through the contractor-dealer. They have realized this and done various things to bring it about. They have put up cash, consigned stock and helped the contractor-dealers to do better estimating and bookkeeping.

And now the Electrical Supply Jobbers' Association are concentrating their efforts to help you and your trade group to give the jobber a better capacity by instituting a course for jobbers' salesmen in the conduct of a contractor-dealer business, taking up such problems as accounting, estimating, store arrangement, etc. In this way we hope to help your trade group broaden its market.

Your group have not taken the jobber sufficiently into your confidence. He is vitally interested in your welfare. He wants you to thrive and to grow. He must have your confidence and know your problems so he can help you. The jobber is your best friend.

Endeavor to organize local groups. Increase the number of men who will come under the influence of your Association. This will place the business on a higher plane .The more you help competitors upward the more you help yourself.

Plan to Reduce Fire Hazards

An interesting system, aimed at the reduction of fire losses, has been instituted by The National Board of Fire Underwriters, which has issued a self-inspection blank for the use of industrial plants. This form calls for a daily inspection of manufacturing buildings with detailed reports on heating, lighting, electrical equipment, fire pumps, and sprinkler systems. The theory advanced is that frequent recapitulation of these daily reports will lead to prompt repair work in plants covering large areas, and thus reduce fire hazards.

The lighting and electrical equipment inspection rules require an immediate report on all broken fixtures and loose wires, as well as frequent cleaning of panelboards or switch and fuse cabinets. Special care is also given to proper oiling of motors and fan bearings, even the replacement of a fuse being noted at once.

The new system is now being used by such institutions as the International Harvester Co., Endicott Johnson Co., and the Mergenthal Linotype Company. In the short time during which these blanks have been available, 300,000 have been distributed by The National Board of Underwriters.

All Must Follow Trade Policy

Report of Committee at West Baden Convention Analyzes Opinion of Other Branches of Industry on Association's Announced Policy

ON March 17, 1925, the Executive Committee passed the following resolution: *"That the Trade Policy Committee and the President be instructed to carry out vigorously the policy of this Association—that is, that distribution be from manufacturer through jobber, through contractor and dealer to consumer."*

There can be no question but that this policy is sound and follows the logical, economical and recognized trade channels, not only of the electrical industry, but other industries in this country which are similarly constituted. There can be no question but what this policy does not startle by its novelty; it is the affirmed policy of almost all industries that have passed the short pants age and even of industries like radio which are still in the diaper age.

If this policy is so wonderful, why is it not generally followed? What can we do to further the complete adoption? The answers are simple to state, but these answers set up conditions which offer tremendous resistance.

I should say that, human greed, was the reason the policy is not followed, and education was the only method to further the adoption of the policy.

For several years your Trade Policy Committee has studied the industry and over a year ago made a report on the conditions as they existed.

In compliance with the resolution of the Executive Committee last March, our president has attended and spoken before the conventions of "The Electrical Supply Jobbers Association." "The Westinghouse Agent Jobbers" and the "General Electric Distributors." At all of these conventions he set forth in strong and convincing language our "Trade Policy"—in each meeting his address was the event of the occasion, and met with enthusiastic accord. His diplomatic and poignant argument with members of these conventions has done untold good for our cause and policy.

Your Trade Policy Committee has been in touch with a large number of jobbers, manufacturers and contractors both by correspondence and personal interview. A survey of a large number of jobbers from Massachusetts to Florida to California would indicate that the policy advocated by the Committee for the past five years has somewhat improved conditions along the lines adopted by your Executive Committee last March.

WHEREAS, This Association recognizes that the development of sounder distribution policies by each branch of the electrical industry depends upon a proper recognition and support of those individuals and firms, whether manufacturers or jobbers, whose policies of distribution are designed to best serve each factor in distribution. Therefore Be It

RESOLVED: That this Association urges all of its members to individually support those interests in the electrical industry, whose efforts are directed towards the channels of distribution defined by the Trade Policy of this Association.—Adopted by 25th Annual Convention, Association of Electragists, International, September 24, 1925.

The jobber is without doubt the branch of the industry that is most familiar with the contractor-dealer, and comes in closest daily contact with him. It will be of interest to hear what the jobbers have to say about us and what they believe is the trouble in the industry, and what can be done to improve matters.

No jobber reports a decrease in his business with contractors; all but three report a considerable increase and that this increase has been progressive from year to year; but one jobber reports the contractors poorer credit risks than five years ago; most of the jobbers place the credit improvement to our Association's campaign for better bookkeeping. The one jobber who states the contractor is a poorer credit risk gives his reasons as follows:

"We feel that in general the contractor-dealer is a poorer credit risk, generally speaking, due primarily to lack of capital and his business not being attractive to capital on account of lack of profit. We are, of course, speaking now of the average, and possibly this lack of profit referred to is due to the increase in number and lack of responsibility of many who have entered the business within the five year period."

The credit association reflects the fact today—and always has—that the contractor-dealer who is slow in paying his bills is invariably overstocked on merchandise. This is borne out by reports from a number of the jobbers, one of whom states as follows:

"It is our belief that the small contractor-dealer will make more money by purchasing small quantities even if it calls for a slightly higher price, thereby obtaining a rapid turnover rather than obtaining a lower price by placing a large order which will give him a slow turnover. We believe the one great success of the contractor-dealer is to keep his merchandise stock and accounts receivable as liquid as possible."

Another jobber from quite a different part of the country says:

"The contractors and retailers who endeavor to purchase direct from manufacturers are called upon to buy in larger quantities and in most instances carry stock anywhere from three months to six and nine months. Any saving made in the original purchase is more than lost in the long investment. I have found that those contractors and retailers who are supporting local jobbers taking advantage of the large stocks carried by local jobbers, thereby getting more rapid turnover in their own merchandise are making a profit."

What is the present policy of the jobber in his sales to industrials? Every one of the jobbers questioned, sells industrials direct. These sales, however, are according to their statements—generally based on a policy. These policies as set forth by the jobbers have a close relationship and are stated as follows:

"We do sell large industrials direct, where a contractor-dealer is not in a position to serve on a competitive basis."

"The question of selling to industrials is one that has always given us considerable concern, although we feel that by and large industrials should be served by the electrical contractor-dealer. Nevertheless, it is impractical to expect that the contractor and re-

tailers can economically serve all these interests. There are certain industrials whose purchases are larger than the majority of contractor dealers. In a great many instances we serve this type of industrial direct but whenever possible and whenever a contractor dealer is serving or making an endeavor to serve industrials, it is our practice not to compete with him."

"We sell direct to industrials only in such cases where they have an electrical maintenance and repair department in charge of a qualified electrician or engineer."

All of the jobbers and practically all of the manufacturers were in favor of the "Trade Policy" of our Association and many had suggestions or thoughts as to bringing the policy about, some of these may be stated as follows:

"We believe that the best way to increase the flow of material from manufacturer to jobber to contractor-dealer is for the latter to become more efficient in the conduct of his business".

"The two great weaknesses we find which prevent the contractor-dealer from functioning economically are, first, that he carries too large a merchandise stock; second, that he is lax in collecting his accounts receivable and, therefore, has a poor turnover on same".

"I feel that the electrical contractors and retailers are a necessary adjunct in the carrying out of adequate service to the public, but we cannot be expected to support them in their position if we in turn are not given the necessary support to properly serve the manufacturers, whose merchandise we carry, for after all we can only show a sympathetic interest just so long as we are of mutual service to each other".

"I do feel that the electrical contractors and retailers by and large, would have made more substantial growth if they had not been so selfish in the development of their own plane and if we could ever bring about a condition whereby we could substitute self-interest for selfishness, we would all prosper to a greater extent".

"Your Association can accomplish a great deal by endeavoring to have its members practice what they preach. I have often told the jobbers that they must not demand from the other fellow something that they themselves are not willing to do. Likewise, I believe that those contractor-dealers who have graduated into membership of the Electragists should practice what their trade policy has announced as being the most practical and economical channel of distribution. In other words, if the prominent Electragists do not support the announced belief of the Association of Electragists, it can hardly be expected that others will do so and, furthermore, it can hardly be expected that contractor-dealers will be attracted to the Association and desire membership in it".

"With the exception of the very large industrials, which I think must be conceded to manufacturers and jobbers direct, your Association can secure its legitimate part of the business by cultivating the confidence of the manufacturers and jobbers. Many jobbers, I am free to say, will have to be met more than half way and the members of your Association will have to exhibit a spirit of tolerance beyond that you should rightfully be called upon to show. On the other hand this will be offset by numerous jobbers who are playing your game and are, themselves, meeting many of your members more than half way.

"I would like to call your attention to a fundamental change which is now taking place with regard to the jobbers position in the industry. I refer to the rapid growth of the merger or syndicate idea among central stations, whereby many jobbers, particularly those located in the smaller business districts, are losing practically all their central station business. This leaves these jobbers very largely dependent upon the contractor-dealer, and if the contractor-dealer does not supply sufficient business to these jobbers to offset this loss of volume, nothing remains for such jobbers except to liquidate or go back into the contracting business, whence many of them originally evolved.

"Your Association can increase the flow of materials through the channels suggested by educating the contractor-dealer as to the wisdom of concentrating his purchases with one or two jobbers, supporting them as regards the lines they carry, and taking the initiative as regards soliciting business that will make him, the contractor dealer, a better outlet for the distributor. By taking the initiative we mean aggressively going after business through promoting better lighting, ventilating, etc., the active solicitation of lamp business, and cashing in on his entree to the home through securing business for more convenience outlets, better lighting, etc., not only on account of the business itself but as a means of selling appliances, washers, cleaners, etc.

"Much can be done to educate the contractor-dealer to make himself be looked to in his community on account of his electrical knowledge as the proper source of supply. In other words if the contractor-dealer can be educateed to do a real selling job, to make himself felt to take a greater interest in civic matters and civic organizations, to sponsor and support electrical leagues, etc., etc. rather than to be content to wait for the new wiring jobs alone and compete for the business solely on the basis of price, he will strengthen his position to such an extent that he can demand and secure the support of the jobber to the mutual advantage of all.

I have gone so fully into these thoughts of the other branch of the industry as it seems well to get as broad a view as possible and see ourselves as others see us. It may seem that this is all very foreign to a Trade Policy report. Your committee, however, is firmly convinced that the Trade Policy is entirely a matter of educating our members to follow the policy of educating the jobbers to follow the policy of educating the manufacturers to follow the policy. It is not possible to force this policy down the throats of any of the branches of the industry, but we must follow the slow process of education and proof by argument. We must start with our own members. There is no doubt, but what if every member of our Association were to start tomorrow and follow out this policy as regards his sales and his purchases we would soon have the entire industry in line. Many of our members, however, are acting as jobbers and contractor-dealers. How many of our members follow the announced trade policy in their purchases? Do any of our members ask the jobber his policy before placing an order? Do any of our members ever make any effort to investigate the policy of manufacturer or jobber?

With great enthusiasm we meet in convention and pass wise resolutions and refer these resolutions to the Trade Policy Committee or other committees and expect them to be carried out without a single effort on the part of the members. Your committees in most cases can do little, except meet with committees of other branches of the industry and get them to agree to our ideas. It is clearly up to the membership to carry out these ideas.

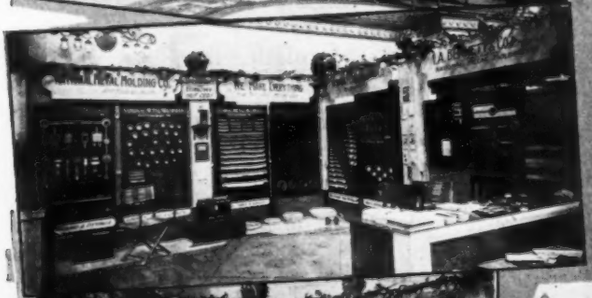
If our Association could possibly act as one in all matters we could control the industry. Our industry must depend on its intelligence and united effort to carry through its plans. There is no question but our small financial investment places us in an inferior position to the central stations, manufacturers and jobbers. While, however, we have in one way the weakest position and can never equal the central stations or manufacturer in money invested, we should and can make ourselves so important, so necessary to the industry that our rights will be respected.

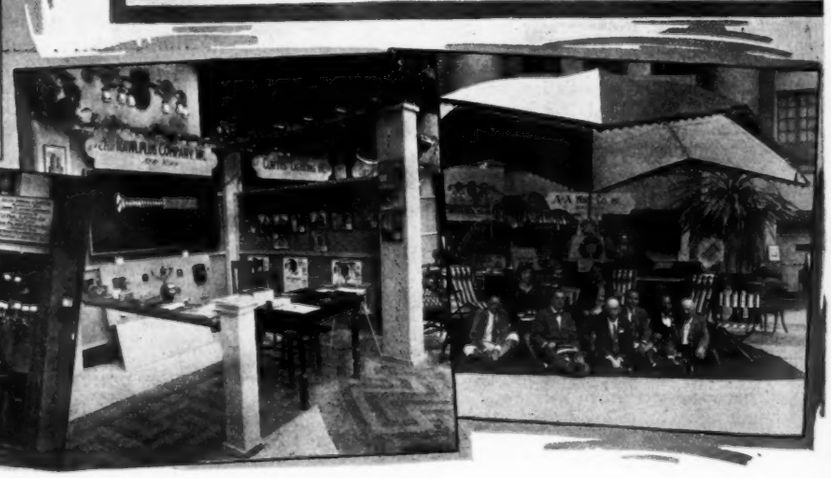
The time is here now to follow out this constructive policy. As pointed out above by one of the jobbers "Super-Power" is placing the jobber where he must more than ever look for sales outlet in the contractor-dealer. Certain of our largest manufacturers are establishing sales policies and spending large amounts to further programs which should be of material benefit to our members. Many, if not all, of the central stations have greatly improved their sales policies.

These changes, which should all be of benefit to our branch of the industry have been brought about by the march of events, the work of our Association and the realization by the big men of the industry that the Electragist has a potential position that can be made use of.

It is right up to us to follow our policy of "manufacturer, to jobber, to contractor-dealer to the public", to clean our own house, to make the others clean theirs, and so sharpen and strengthen this plank of our platform that no little red herrings can be drawn across the trail to divert us.

And remember as President Fowler so well said, "Associations may pass resolutions, but resolutions can only be realized through membership support".





Manufacturers'

GROUPED around the wall of the great atrium of the hotel at West Baden at the Electragists' Twenty-fifth Annual Convention were the exhibits of virtually all of the prominent manufacturers serving the electrical contractor-dealer field. The booths were well arranged and for the most part were highly educational. The Exhibition Committee, composed of William G. Campbell, chairman, Samuel A. Chase, J. O. Wetherbie, Dwight R. G. Palmer and E. Zinsmeyer, was specially careful to permit exhibits only by reliable manufacturers.

Many were actual working exhibits, one of the most extensive being that of the Frank Adam Electric Com-

LIST OF EXHIBITORS

A-A Wire Co.
Frank Adam Electric Co.
F. A. D. Andrea, Inc.
Appleton Electric Company
Ass'n. of Electragists, Inter'al.
Automatic Electric Washer Co.
Benjamin Electric Mfg. Co.
Bryant Electric Company
Central Electric Company
Central Tube Company
Chicago Fuse Mfg. Company
Curtis Lighting, Inc.
Dallas Brass & Copper Co.
Economy Fuse & Mfg. Co.
Edison Elec. App. Co., Inc.
Edison Lamp Wks. of the General Electric Company
The Electragist
Electrical Record
Electrical Por. Mfrs. Ass'n.
Enameled Metals Company
Franklin Pottery
General Electric Company
Gillinder Brothers, Inc.

Exhibition

pany which demonstrated a new type dimmer board by actual connection to the special hotel illumination.

This year the exhibitors were of tremendous aid to the convention committee in bringing out a large attendance. To them belongs much of the credit for the interest aroused concerning the convention.

There was special and most attractive decoration and illumination for the Exhibition in which the following organizations co-operated: Holophane Glass Company, Curtis Lighting, Inc., and Westinghouse Electric & Manufacturing Company.

LIST OF EXHIBITORS

Hurley Machine Company
J. S. Jacobson
Mid-West Metal Products Co.
Mutual Electric Machine Co.
National Lamp Works
National Metal Molding Co.
Rawlplug Company
Signal Eng. & Mfg. Co.
Simplex Electric Heating Co.
Society for Elec'l. Developm't.
Square D Company
Star Expansion Bolt Co.
Triangle Conduit Company
The Trumbull Elec. Mfg. Co.
Trumbull-Vanderpoel Electric Mfg. Company
Van Cleef Brothers
The Wadsworth Elec. Mfg. Co.
Albert Wahle Company
Western Electric Company
Westinghouse Electric & Mfg. Company
Westinghouse Lamp Co.
Whittaker Fireplaces

Responsibility of Dealers to the Buying Public*

By MARTIN L. PIERCE
The Hoover Co., North Canton, Ohio

BUSINESS organizations are formed primarily for profit and organizations that do not make profit cannot remain active long. The technique of business is known. It is a simple matter to rent a room, select proper merchandise, and install adequate accounting systems. But the moral responsibility, which the dealer must fulfill to his public, is also many times greater than his material responsibility.

One of the dealer's outstanding moral responsibilities is the selection and training of an adequate sales force. If salesmen fail there is generally some reason to be looked for beyond the three dangerous Ls; laziness, liquor, and lower prices. Some salesmen do not produce because they lack faith in the time-tried selling plans of their company; others are listless because personally they are content with small success; a third variety of salesman just "talks" because he has never taken the trouble to study his merchandise.

A second of the dealer's outstanding moral obligations is to select functional instead of mechanical appeals for the distribution of his merchandise. People usually think that they buy merchandise because they are convinced that it is what they want. The fact is, however, approximately ninety percent of the merchandise sold is sold as a result of emotional appeals which have no bearing at all upon the judgment of the individual. The relation value of emotional appeals has in some cases been expressed by rank and percentages. In practically every national ad you will find evidence that the advertiser believes that human conduct is dominated by emotion.

The successful use of emotional appeals demands that the advertising copy and sales talk should definitely fit the commodity. Business letters that "pull" are filled with emotional quality. "We have missed you from our store during the past six months. Won't you please, on the back of this letter, tell us frankly why? If it is our fault we certainly want to make things right." This is an appeal to fairness. It gets results. This quality is what gives such letters their color, their life, and their power to awaken imagination. The letter must not only interest the reader but must induce him to act on the strength of the interest and sympathy aroused by its statements. In these letters at some times emotional emphasis can be placed on the product itself, such as a wedding anniversary gift; but many times this is impossible and the appeal must be made directly to the imagination.

Martin L. Pierce

Dealers selling electrical appliances never made large sales until they developed the use of emotional appeals. The first evidence of this was when the advertising shifted from labor saving to improved methods. The old way was to depict aching backs, tired and roughened hands, perspiring and wrinkled faces. This was done to enlist the active support of the American housewife. Today dealers have the backing of the American housewife and now they talk to them about better foods through the use of electrical refrigerators.

The smaller appliances are sold on their results as well. They do not sell a toaster but crisp, hot toast for the breakfast table. Eggs are being served from the grill, hot with the bacon. By the use of the percolator the last cup of coffee is as hot and delicious as the first.

It is certainly the dealer's responsibility to properly instruct the public in the use of his products. It is not enough for the manufacturer of equipment to develop a production and distributing organization that will turn out the best product that can be purchased for the money. He should also be vitally interested in having it applied properly. Failure of an installation to meet the user's needs may be charged against the product applied, even though it is all that was claimed for it. After all, the manufacturer has a responsibility to insure satisfaction in the user of his product through its efficient operation.

Merchandising is a profession and the man or institution that hopes for success in merchandising must be willing to pay the price of success. The success of electrical dealers requires: Proper selection and training of salesmen, use of emotional appeals, the carrying of a limited number of lines, carrying advertised goods, instructing the public in the use of products, and the proper servicing of products. The merchant who is willing to pay the price to master these principles will succeed.

The question "Who shall sell electrical appliances?" was recently asked in an electrical magazine. The answer cannot be given simply by a survey of present distribution but it will be answered ultimately by merchandising fitness on the part of those who seek to distribute them. Nothing will pay larger profits to the electrical dealer than the willingness and the ability to assume the moral responsibility in the distribution of his products.

*Abstract of address before Twenty-fifth Annual Convention, Association of Electragists, International, West Baden, Ind., Sept. 23-25, 1925.

The Code—Past and Future*

By W. J. CANADA
Electrical Field Secretary, N. F. P. A.

AMONG construction codes of various kinds the electrical code for interior wiring is venerable—30 years old in its present form. But while we are fundamentalists in our belief in Codes and particularly in the National Electrical Code and are averse to bolshevism through variability in requirements from place to place, we are evolutionists in our acceptance of the fact that, as the famous colored preacher said "the world do move". We can see the electrical art changing—it changes greatly within a single generation. We may thoughtlessly be somewhat regretful for the simplicity which is so apparent in early editions of the Code—few pages, few subjects, few restrictions, easy reading. Thoughtless persons chafe and cry out today at a code, of many pages, many subjects, many restrictions. But they are like all older generations, vainly regretting the good old times. Thinking men know well that codes will inevitably and helpfully increase in length and completeness as the arts they deal with develop in detail and importance.

So, taking the electrical world as we find it, and the code as it is and as it must be, a lengthening document, let us see what have been the stepping stones of Code development in the past, and what may probably be some of those in the future.

Beginning with broader reasons and methods of Code development; first, there has from year to year been need to make the Code correctly and clearly applicable to the new wiring methods and, as they are introduced, new devices. No one would suggest withholding needed developments of electrical economy, convenience or safety, just because former rules did not contemplate or clearly cover or permit them.

Nor do many approve the idea of making (or keeping) code rules so vaguely general that almost anything can be interpreted into approved practice or out of it. As against this clearly

W. J. Canada

evident evil, the incidental inconvenience of more rules and more detailed rules, fades into insignificance. And so in the second place there has been the evident need of making code interpretations more and more nearly automatic.

Just as a man takes on responsibilities year by year, so does a code. Though safety may have been its first and continue its main purpose, it cannot avoid affecting business relations and it acquires a responsibility for assisting, not hindering, those business relations. It is true that some of these responsibilities might be shifted to other shoulders, to the shoulders of some other kind of code. Few, however, would consider such a method for a minute. Confusion would certainly follow the advent and continued separate development and use of different codes to govern different phases of interior wiring. The code, in other words, must recognize, and consistently promote, convenience and economy as well as safety. Where installations are competitive, a code must provide a safe and economical competitive basis. This is the third reason and course of code development, and calls for further development.

Our fourth broad reason and course of code development has been to make wiring installations provide longer service without greater disturbance to the premises concerned, subsequent to the wiring installation. At first, electric wiring was a toy like radio. But many long years ago, electric wiring passed out of the toy stage into the realm of necessity. Our comfort depends on it. Our daily life is wrapt up in it. The investment, small though it be in comparison with its value, is still too much to permit considering wiring as a temporary installation, frequently to be redone. And so, from year to year, our rules have developed toward making installations safe for longer use. This has necessitated consideration of probable future mechanical disturbance, probable future demands for increased load, probable future demands for more diversified and more dispersed use about premises. To meet all these future demands for wiring installations has brought about great development of the Code, more pages, more items, more detail, closer specification to promote clarity and fair competition. Still greater development is to be expected.

In every growth there should have been and generally were, these criterions utilized—Is the change advisable for safety, economy, convenience? If any one of these criterions was insufficiently applied in the past or looked at through the distorting glasses of any one group in the great electrical industry, that code rule is due for reconsideration. In the future, these criterions will be increasingly well applied as they are more consciously and more representatively applied.

It might be well to enumerate the safety factors which are the soul of the Code, and by which each code development is necessarily guided. For interior wiring in premises other than those devoted to public utility service, wherein the considerations are widely different,

*Abstract of address before Twenty-fifth Annual Convention, Association of Electragists, International, West Baden, Ind., Sept. 23-25, 1925.

the safety considerations applying are (1) relatively low voltages applied and assured, (2) all higher voltage parts isolated or effectively guarded from contact, (3) large margins of safety in current capacity, dielectric strength and in resistance to deteriorating or damaging exposures of the devices and wires permitted, and finally, progressively as the number of applications increases and as more handling becomes necessary, (4) less dependence on the element of personal caution of users and more dependence on the manufactured (built-in) safeguards.

But widely accepted as are these safety considerations, they depend for their effective control in the Code and in the Code application upon the proper and sufficient development of the Code as an economic and business code, a code for electrical and business relations involved in interior wiring. And final dependence must be on uniform application of the Code.

A Union of Two Codes

Let us briefly inquire, who has made the Code grow? Well, sometimes we hear an occasional power utility man complain that other interests want too much code. Recently some of us have heard insurance men complain that contractors and inspectors want too many details, a little chafing at the natural code development. But way back in 1890 each of these interests had a code of its own. These codes were the papa and mama of our present code which was born of a union of these in 1894. Both the previous two codes and this amalgamated code were for the purpose of providing a guide for wiring, to make it safe, to put competition on a good basis, to make manufacturing and distribution economical.

Now we could say, and there is always some truth in saying, this group added this to the code, that group added that. Sometimes additions to an art or to the code of that art are not quite so simple. Never should one group be able to add this or that without cordial cooperation rather than merely dignified acquiescence of other groups. But it is true that certain additions do appear as having been mainly fostered by some one group or another.

Take for instance the much vexed question of how to use conduit economically for wires. Some contractors would use a different shoe horn to crowd wires into a tight fitting conduit and the Lord help those who might ever wish to replace or repair. And the contractors promoted a good guiding rule, much more detail, but very useful. No one has complained of these added pages. In fact, the demand appears to be growing for more detail in this very matter, for more tables perhaps, and certainly a broader applicability of the 40 percent area rule, with probably an extension to 50 percent for runs of short length with much more limited bends than the four 90 deg. ones on which the present tables are based. Who can best do this further work? This association, of course, with the help of all the others.

Problems

Then there are the questions of diversity factor as affecting suitable size for feeders, the temporary motor starting load as affecting suitable size for motor leads and feeders, the probable future load per unit area in different classes of occupancy as affecting the suitable limitation on area fed by any single light and appliance circuit. All of these questions are getting more pressing. All need early solution.

There was a time when we called such subjects "engineering matters", and did not think them suitable matter for the Code. But why should not the Code make engineering judgment available as a guide. City after city have adopted some special rules on these and similar matters. City after city have adopted some plan for limiting the number and character of allowable types of wiring, roughly according to the criterions of safety, economy, and convenience. Probably better progress would have been made and less friction developed had all electrical groups co-operated to effect such limitation according to classes, sizes, and occupancy of buildings rather than as a matter of emulation between cities, regardless of building conditions, thus making a logical competitive basis for installation jibe with logical considerations of safety, economy, convenience. One side of this problem your association has already attacked, but initially through ordinances which vary in form and economic effect from city to city. Why should treatment of this subject not be logical development in the Code itself?

Many cities today, as a result in part of inadequate development of the Code along detailed lines, are adding their own detail, and the local members of national groups are acquiescing, if not co-operating or even promoting. Having acquired a habit of making separate rulings, momentum carries these local legislations into actual changes from the National Code, a process very disrupting to a complicated art, and very expensive to the public dependent on that art. Should we not all work to narrow the margin of detail in local rules above the detail in the Code? Careful study will reveal how much of this detail can well be incorporated in the Code itself. To the extent this is feasible, simplicity and standardization will have been effected and expense of duplicate work, duplicate materials, and of friction.

Now, who more fitted to assist actively, even to initiate Code study, and who more likely to use business judgment and an economical choice between stimulating greater use of electricity and greater safety and permanency of particular installations than your group as a whole? In your numbers and your diversity of location, any narrow point of view gets its corrective and becomes chastened and altruistic. This is another reason, a major one, applying to all groups—why national, rather than local, rules need development. The development is saner and not so at the mercy of every idle wind that blows.

Industry United

Fortunately a realization of the unwisdom and unsoundness of erecting local rules with large margins of variation from the National Code has gradually come upon all interests. All have now united to have a study made of this situation, to learn the cure and apply it. Apparently the cure is to be found in a simultaneous improvement of the Code in certain details, demand for which appears widespread and sound, and a united effort to minimize local code changes and so-called interpretative special rulings. This will not prevent needed local administrative rulings.

The participation of this Association of Electragists, International, in the support and assistance of the Electrical Field Secretary project, co-operating with the Electrical Manufacturers Council, the Electrical Supply Jobbers, the National Electric Light Association, the National Board of Fire Underwriters and Underwriters' Laboratories, makes this enterprise a thoroughly cooperative one, with all interests duly represented.

Abstracts of Important Committee Reports

National Electrical Code Becoming Stronger

Progress in the work of making the National Electrical Code a greater force nationally and locally was revealed in the report of A. Penn Denton, chairman of the Code Committee. As senior representative of the Association on the Electrical Committee, N. F. P. A, and chairman of Article V Committee, which takes up Wiring Methods, Mr. Denton reported that a complete rewriting of Article V was planned to insure clarity. This work is scheduled for the meeting of the committee in February, as well as the preparation of rules governing the installation of non-metallic assemblies and an investigation of underfloor duct systems. Splendid cooperation from manufacturers and jobbers on the plan for a conference of all interested in any changes proposed in wiring methods under Article V was also reported.

Some real results are being accomplished by the local Code committees. In several cities, Mr. Denton stated, they have been of material assistance to electrical leagues in the preparation of new electrical ordinances.

"There was never a time in the history of the National Electrical Code," said Mr. Denton, "when the electrical industry has been given the opportunity it has today for real service in cooperating in the making of the National Electrical Code Standards. The organization of the Electrical Committee, as accomplished at its November 1924 meeting, whereby it became a Sectional Committee of the American Engineering Standards Committee, gave it just the opportunity and stimulus needed to permit the direction by the electrical industry of the revision of all future National Electrical Code work. It now remains for the electrical industry to assume its responsibility and measure up to the big task before it."

Campaign Launched to Gather Labor Cost Data

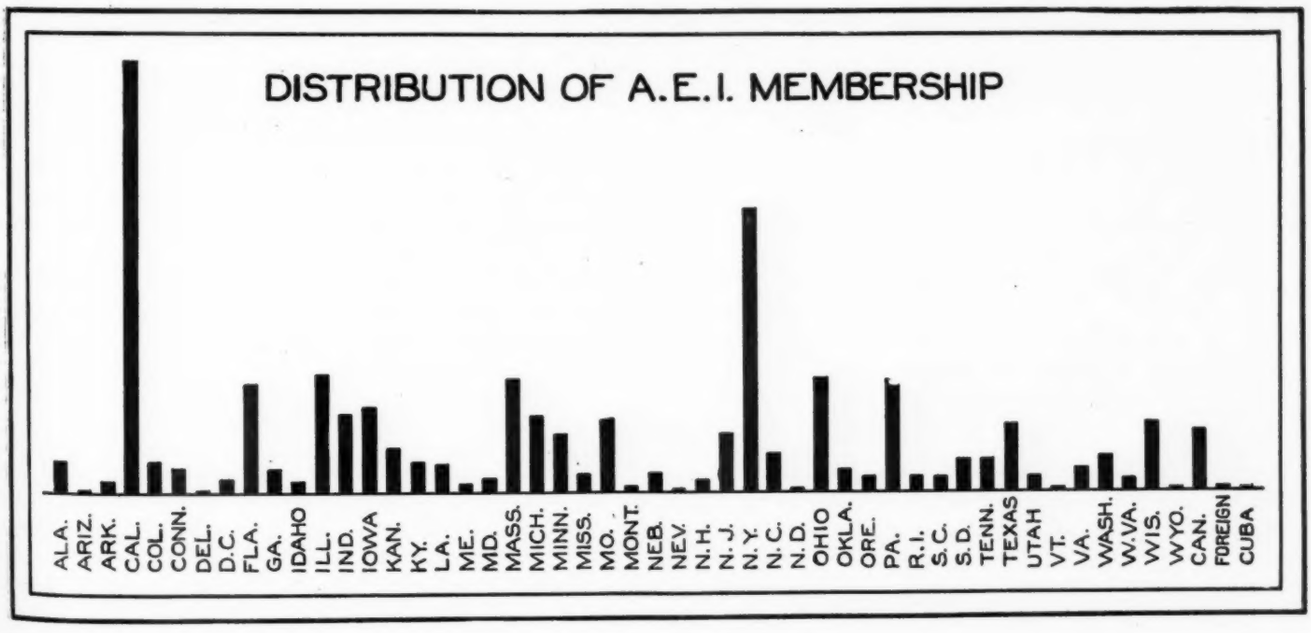
A Labor Cost Data Committee of about twenty-five contractors has been appointed to obtain labor data on various classes of electrical work and construction. This is part of the effect of the Cost Data Committee, of which J. H. Schumacher is chairman, to accumulate a large amount of labor cost data from all parts of the United States and Canada in order to check the data now contained in the Manual of Estimating and to extend the scope of the Manual to include additional classes of work.

"The widespread use of the Manual," Mr. Schumacher stated, "and the study of scientific estimating methods will cause more contractors to keep cost records of work in hand, which in turn will enable them to handle their work more efficiently and to acquire a better standing in the building industry."

Membership Gains 14 Percent in Six Months

With most States showing an increase the membership as of September 1 was 2,090, an increase of 256 or 14 percent since the March meeting of the Executive Committee, according to the report of C. L. Chamblin, chairman of the Membership Committee. Almost half of this gain was from California, Mr. Chamblin's home State.

There is shown here graphically the membership by States. California leads with 363, New York next with 238,



Illinois third with 99, Ohio fourth with 96 and Massachusetts fifth with 95.

Should Encourage Electrical Dealers to Sell Radio

More electrical dealers are gradually getting into the merchandising of radio sets and parts, is was stated by E. C. Headrick in his report as chairman of the Radio Committee.

Mr. Headrick states, however, he found that many electrical dealers have not enough confidence in the radio industry to venture much of an investment in radio stock. The dealer needs some assurance from the manufacturer that, if he is to go out and spend his money and time advertising a manufactured product, he should certainly receive a reasonable amount of protection against price cutting and unfair competition.

"I believe," he said, "we should encourage our member electrical dealers to take on the selling of quality radio merchandise; if for no other reason than a matter of self preservation and because of the fact that radio is going ahead and will be sold, if not by an established electrical dealer, by some other source, new-comers or what not, who soon will dabble, more or less, in the selling of electrical household appliances, etc."

Field Representative Sees Better Local Conditions

A decided change for the better in the attitude of the electrical contractors and dealers, members and non-members alike, was reported by Arthur P. Peterson, field representative for the Association. Even in cities where the men previously would have nothing whatsoever to do with each other, refusing to speak in some cases, there has been brought about, he said, a friendly business feeling.

"Evidently the men of our industry," Mr. Peterson stated, "have come to realize that unintelligent and cut-throat competition is benefiting no one and that the thing to do is to get together and through uniform methods and practice bring about safe and sane rivalry. They want to know what other cities are doing to improve conditions and they are anxious to avoid the pitfalls into which other groups have fallen."

In the past year Mr. Peterson has been in contact with five hundred or more cities, visiting thirty States and two Canadian provinces and covering in all more than 28,000 miles.

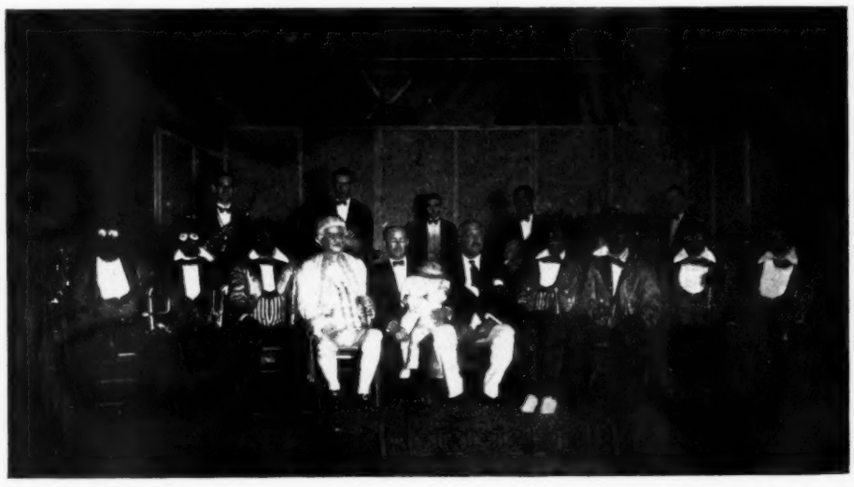
The Minstrel Show

ONE of the features of the 1925 A. E. I. Convention that will be remembered for a long time to come was the playlet, "The Ins and Outs of an Outlet," and the Minstrel Show.

The playlet written by Walter J. Collins, secretary of the Chicago Electrical Contractors' Association, and played by him and Mrs. Collins is a humorous skit satirizing the contractor who buys the job by cutting the price. The owner had decided on an adequate layout, but Smith, the contractor, fearful that the price was going to be too high succeeded in inducing the owner's wife to consent to taking out about half the outlets so that the price could be made low. She did, but when Mike, the wireman, comes up to do the job he tells her that they will be getting well acquainted after he has come back a few times to put in outlets that she finds she needs. Then they go over the layout and one by one back go the outlets.

The lines are very good and the acting of both Mr. and Mrs. Collins was such as to bring out its full humor and satire.

Then the Glad Hand Committee, assisted by James R. Strong, staged one of the funniest and most original shows ever produced—an old-fashioned minstrel show with catchy lyrics and jokes. The players were equipped with imitation musical instruments with which they kept the audience in an hilarious uproar.



The Glad Hand Minstrels—Left to right: Walter Collins, Chicago; Tom Hatfield, Indianapolis; Jesse James, Florida; Sam Chase, Mansfield; Jack Caddigan, Boston; Jim Strong, New York; Nat Walker, Raleigh; R. A. L. Gray, Canada; Hugo Tollner, Brooklyn and Tom Bilber, Chicago

There was the customary singing and dancing by the individual members of the cast and a ventriloquist act in which Tomny (the dummy) (Mr. Collins) was easily controlled by the professor (Mr. Caddigan) until it came time for the latter to smoke.

Vocal solos by Walter Collins, Tom Hatfield, Hugo Tollner and Tom Bilber as well as a piano selection by Jesse James received long and well merited applause.

Mr. Strong, dressed the part, sang a wild Irish ditty (?) which took the house by storm as did also the recitation by Tom Bibben in which he imitated a young man with a cork arm.

The opening chorus written by Mr. Caddigan had many catchy lines and is given here for the benefit of those who were not present.

The Electrical Inspector*

By WILLIAM S. BOYD
Secretary, Western Association of Electrical Inspectors, Chicago

WE hear constantly the statement that "there is an exception to every rule," also that "there is a black sheep in every flock". In speaking to you today I shall discuss the activities and achievements of the average electrical inspector conceding at the very outset that there have been and may still be within the ranks of the profession those who are not a credit to it, but it must be admitted that these exceptions are and have been few and far between.

In the middle west, which is the only territory that I know much about, the proven cases of dereliction of duty have been so few as to be negligible, nor have they been exclusively confined to the ranks of the municipal inspectors. In fact I can remember of only one municipal electrical inspector against whom charges of graft were actually sustained in a trial, and I can only recall one or two serious cases of dishonesty on the part of electrical inspectors representing insurance interests. Political interference has been a great source of embarrassment to the municipal inspector but he has even triumphed over this in many cases because he has been able to swing to his support the business interests of the city which he has served faithfully. I regret to say that in some instances a great deal of trouble and political interference was caused by the then quite common political and intriguing central station manager who has now quite effectually faded from the picture.

Historical

Some of the early applications of electric light to the manufacturing business took place among the textile mills of New England. Twenty-three fires developed in sixty-five installations within the first six months of service. The insurers of these mills became alarmed and instructed their engineer, the late C. J. H. Woodbury of Boston, Massachusetts, to investigate the subject and make a report. Mr. Woodbury sought the advice of the leading electricians of the time, Dr. Chas. H. Brush, Professor Elihu Thomson, Mr Hockhausen, Thomas A. Edison, and others. The conditions which caused the fires in the textile mills were duplicated in tests and from these experiments the first rules to safeguard the installation, operation and maintenance of electrical wiring and apparatus were developed, and it is reported that the application of these rules together with the amendments that have been made from time to time have practically put an end to serious fires of electrical origin in these properties.

William S. Boyd

In the middle west some few years later, fires of electrical origin became so frequent and disastrous that the insurance companies decided to take drastic action and secured the services of William H. Merrill, than an electrical inspector with the Boston Board of Fire Underwriters. Mr. Merrill came to Chicago early in 1893 and one of his first duties was to examine into electrical conditions prevailing in the buildings of the World's Columbian Exposition, which was then about to open. Mr. Merrill brought about the elimination of many dangerous conditions in the electrical installations in the City of Chicago and greatly improved the standard for wiring. He also inaugurated in the middle west a campaign to bring about the adoption of ordinances regulating the installation, operation and maintenance of electrical wiring and apparatus on the part of cities, towns and villages. In this work he was opposed by the local central station manager, the local electrical contractor, and in many cases the manufacturer of electrical material and fittings.

Previous to the appearance of the electrical inspector it was impossible for an electrical contractor to install a first class job of wiring because of the fierce competition that existed and the fact that the successful bidder was the man who could ignore the greatest number of safety precautions and therefore save the greatest amount of material and fittings. With such installations it was impossible for the central station to render satisfactory service and so many troubles arose on these cheap installations that the owner became disgusted with the unreliable service, blaming the electrical contractor for most of the trouble.

Of course, there were exceptions to this general experience, but they were not sufficiently numerous to encourage a reliable contractor to maintain a high standard for electrical installation work. When the electrical inspector made his appearance, however, the whole scene changed. A fairly good standard for wiring was at once adopted and maintained and all electrical contractors, honest and dishonest, were required to bid upon the same class of work and, with no opportunity to slight any portion of it, the quality of the work improved.

Compared with the uninspected wiring the public after securing inspection experienced the following benefits: The service rendered was superior, there being less outages and better light. The quality of material and fittings greatly improved, performing the service re-

*Abstract of address delivered before the 25th Annual Meeting of the Association of Electragists, International, at West Baden, Indiana, September 24, 1925.

quired of them in a superior manner and there were fewer replacements and repairs. The combination of superior material and fittings with good workmanship, brought about an almost complete elimination of current leakage due to accidental grounds. You may be interested in one example of this type of saving. Shortly after the Iroquois Theatre disaster a newly appointed electrical inspector condemned the wiring in a large theatre in his city and when the work of rewiring was completed it was found that even with an increase in the number of lights the monthly current bills showed a decrease of 33 1-3 percent which saving in a few months paid for the entire cost of reconstruction.

Knob-and-Tube Work

During these fateful days Mr. Merrill early gave his attention to the establishment of a better standard for concealed knobe-and-tube work in the various cities, towns and villages of the middle west by securing the appointment of municipal electrical inspectors. Mr. Merrill's work began at once to yield results in the form of decreased electrical fire losses in inspected districts. The rules governing knob-and-tube work were improved from year to year and a large amount of instruction was given to electrical inspectors, electrical contractors, central station men as well as architects, builders and business men generally and the rules and requirements for knob-and-tube work became quite well known throughout the middle west and the then existing weak points in the system were quickly discovered and taken care of until today the characteristics of this type of wiring have become so well known that almost any architect or builder has become familiar with its vulnerable points and how to detect and safeguard them, an asset which should not be lightly regarded. It was this type of wiring which came to the rescue in the hour of need, therefore, electrical inspectors generally feel very kindly toward it and would regret to see it discredited and abandoned especially in the so-called "tall grass towns" where there is no regular inspection service and the architect or builder must be the inspector.

In the City of Chicago, however, when the construction of apartment buildings became popular the space between the joists and studding began to be occupied by steam, water and gas pipes as well as plumbing and the electrician found it increasingly difficult to find sufficient room for his wires. Then too, the close proximity of pipes to the electrical wires, and the carelessness of mechanics, tended to bring about a good deal of mechanical interference with the wiring which the inspector found it difficult to cope with, and for this reason Chicago felt it desirable to abandon concealed knob-and-tube work and insist that all concealed wiring be installed in rigid conduit and metallic armored cable. This reduced the amount of responsibility upon the shoulders of the electrical inspector and tended to defeat interference upon the part of gas-fitters, plumbers, steamfitters, furnace men, lathers, plasterers, carpenters, etc. Then too, the introduction of steel beams in this type of building tended still further to increase the problems of the installer of knob-and-tube work. Hence, knob-and-tube work was not abolished because it was inimical to safety but because it was abused by other mechanics. This particular feature was taken care of in other cities by an ordinance forbidding interference with electrical wiring.

Metal Zones

The fear of conflagration in the congested districts of cities has caused the municipal authorities to establish what is generally known as "fire limits" within which none but superior construction is permitted, the idea being to prevent as far as possible, the starting of fires and to restrict the area of its operation when a fire has started in this section. This policy promoted the construction of so-called fire-proof buildings. Of course, it was impossible to install concealed knob-and-tube work in this type of building and rigid steel conduit made its appearance. The inherent safety in this type of construction and its ability to resist mechanical injury tended to make it exceedingly popular and its use instead of being restricted to fireproof construction was extended to other types of buildings and later many cities adopted metal zones comprising the fire limits of the city in which concealed knob-and-tube work was prohibited and practically all construction was required to be in conduit or metal armored cable and fires of electrical origin in these districts have, as a result of the use of this type of construction been kept to a very low figure and such fires have been as a rule exceedingly restricted as to the amount of damage.

Conduit work is also popular with the electrical inspector because it requires less time to inspect it and for the further reason that when the installation has been completed, it is usually quite free from interference on the part of amateur electricians.

Electrical Material and Fittings

Mr. Merrill early saw the need of a better quality of electrical material and fittings and this vision also included a method of accomplishing the desired result, so in 1894 he established an electrical testing laboratory under what was then known as the Electrical Bureau of the National Board of Fire Underwriters, and began the testing of electrical material and fittings in a very modest way. Being the first man employed by Mr. Merrill in this work I know something of its early hardships and triumphs. The crude apparatus then available produced marvelous results and the work has since grown to enormous proportions. Many of the electrical manufacturers of those early days welcomed the testing laboratory and cooperated in making it successful while others, on account of the pressure of commercial conditions, did all they could to obstruct progress, but these obstructors soon realized that they were hurting themselves more than anyone else and could not hope to be successful in their business unless their material and fittings were of reliable quality and gave good service when installed.

In my humble opinion the service rendered by the electrical testing laboratories, established by Mr. Merrill, have performed the greatest known single service in behalf of electrical safety and Mr. Merrill may be designated as the Moses who led the electrical industry out of Egyptian darkness into the light where they were freed from the slavery of attempting to make "bricks without straw" (a rational standard) and enabled them to put out a product in which they could have confidence and take pride. Mr. Merrill's masterly generalship on many occasions saved the laboratories from political and economic destruction.

Cheap Wiring

All electrical contractors and all central station men were not convinced at the outset that cheap wiring, including substandard electrical material and fit-

tings together with poor workmanship, was an economic blunder and for years after some of them listened to the argument that in order to expand the business the cost of wiring installations must be kept as low as possible. I remember one particular group of companies that was infected with this mania of cheap wiring and for years fought every effort to improve the standard for wiring in the cities in which its companies operated, and you can well imagine that the electrical inspectors in these cities were faced with many difficulties. In one city, however, this organization endeavored to force the municipal inspector to accept two or three makes of substandard material in the interest of economy but when the matter came into court the inspector was sustained on every point.

The Electrical Fire Loss

In spite of the fact that electricity is the safest form in which energy can be distributed for light, heat and power, fires of electrical origin are every year bringing about the destruction of millions of dollars worth of property. Even assuming that the statistics are not correct and that the amount is greatly overestimated, it is still a disgrace to the electrical industry that carelessness and ignorance in connection with the use of electric current is productive of the destruction of so much life and property. Instead of putting forth an effort to discredit these statistics, efforts should be made to take care of this trouble at its source and bring about a clearer understanding on the part of the users of electricity concerning the safe operation of utilization equipment together with the establishment and maintenance of a better quality for electrical installations.

One of the greatest problems with which the electrical inspector has to cope today in electrical installations is the abuse of fuses. Many fires are reported as a result of the installation of metal inserts in place of plug fuses and the substitution of copper wire for fusible metal in other forms of fuses. The electrical inspector is alive to the situation and is endeavoring to formulate a plan of campaign which will successfully cope with it.

Wiring Plans

Now the question arises as to just how far the municipal electrical inspector can go in safeguarding the interests of the public and it is becoming increasingly clear to him that the public will welcome every activity possible on his part to prevent the perpetration of fraud on the part of the installers of electrical apparatus.

In many cities the inspector has worked with architects and builders in the preparation of a suitable specification for wiring and now he is being urged to insist upon the filing of plans for electrical wiring before permits are issued to begin the work. It is hoped that while this activity will increase his labors it will also bring about a larger remuneration to him and establish him still more firmly in the affections of the public. There is no question but that this service to the public will be of immense value if intelligently carried out.

Standards

The electrical inspector has shown an almost universal tendency toward the maintenance of high standards for electrical work and the greatest discouragements that he has suffered have come from what seems to him, tendencies toward the lowering of the existing standard for wiring, which in his opinion sacrifice the best interests of the public. This condition of thought has tended in a great many instances toward the adoption of special rules for local application. You and I will agree that this is a technical blunder and tends to threaten the very existence of the standard so dear to the hearts of every electrical inspector and the electrical industry would do well to take note of this and wherever possible, resist every effort made toward the lowering of the standard for wiring set forth in the National Electrical Code, especially those changes that tend to give the public a less satisfactory type of wiring. In a high standard for wiring lies the salvation of the electrical contractor.

As a result of the adoption and enforcement of the rules contained in the National Electrical Code, we have promoted heavy investments in building up many industries and these industries have certain moral rights that the industry in general is bound to respect. We have promoted the building up of the porcelain industry and have incurred certain moral obligations thereby. We have also promoted the building up of the flexible tube industry, and here again we have automatically acquired certain moral obligations. So it is with the metallic armored cable industry and the steel conduit industry, and if a cry is legitimately raised against changes in the Code that bid fair to destroy the 250-watt socket because costly machinery is thereby rendered obsolete, then by the same token it is equally unjust to destroy the demand for other products and render useless other machinery equally if not more valuable through changes in the Code calculated to lower the standard for wiring which indirectly accomplishes the purpose complained of in the case of the 250-watt socket.

If we betray the electrical industry in this way, what inducement is there to make large investments to bring about quantity production and economic distribution?

The standard for wiring in this country must be formulated from two standpoints: One, the city having electrical inspection service and the other the "tall grass town" where no supervision is available. Some of the difficulties of maintaining safe electrical conditions in the latter will be appreciated when I tell you that it has taken over thirty years to establish the requirements for concealed knob-and-tube work in the consciousness of the architect and builder as well as the electrical contractor in the small town, and this must be taken into consideration before rules and regulations are adopted which tend to throw this hard work in behalf of concealed knob-and-tube work into the discard.

I have been greatly interested in the efforts put forth by the Society for Electrical Development to promote the progress of the so-called Red Seal Plan and I hope this means the beginning of the end of all arguments in behalf of so-called cheap wiring.

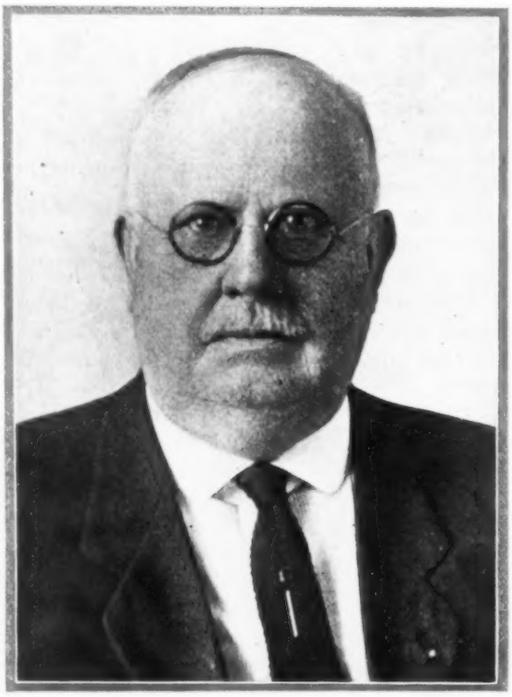
Prophesy

The keynote of the electrical industry is "service" and this industry is endeavoring to portray itself in the consciousness of the public as standing with outstretched arms saying "Come unto me all ye that labor and are heavy laden and I will give you rest." This vision can only be externalized when the electrical industry ceases to make any attempt to serve two masters and whole-heartedly serves the public, its real master and benefactor, by having an eye single to the well-being of the public and in this connection it must be admitted that first and foremost the use of electricity must be made safe. The industry will find the electrical inspector more than willing to co-operate.

Edward H. Eardley, Salt Lake City

EDWARD H. EARDLEY was born in Salt Lake City forty-six years ago and received his education in the public schools of that municipality. Afterward he prepared himself for the electrical business by technical courses and hard private study. This was just following his natural bent for he had been doing electrical work since he was twelve years old, having been employed at that time by E. G. Holding. In 1906 he organized the firm of E. H. Eardley & Bro., which was incorporated in 1914 as Eardley Bros. Company. Following a nervous breakdown, he retired from this firm in 1919. Some time later, established the Eardley Electric Company, which today, under his management, is one of the largest retail electrical establishments in the intermountain region and which also carries on an extensive contracting and fixture business. He has always taken an active part in organization affairs, having served several terms as a member of the Board of Trustees of the Intermountain Electrical Cooperative League as well as a member of the committee of three which drew up the original constitution of the league. He has also been Executive Committeeman of the A. E. I., representing the Mountain Division. Chamber of Commerce work claims much of his attention and he has served for some time as chairman of the speakers bureau of that organization. He is a Charter Member of the Kiwanis Club; past President, and for eleven years a Director, of the Utah Manufacturers Association; and was a member of the Salt Lake City Board of Education during the years of 1919 to 1921.

Electragists You Should Know



Frederick W. Newman, Albany

THE entire American existence of Frederick W. Newman, embracing a period of fifty-two years, has been devoted to the science and the practice of electricity. His experience in the industry has ranged from digging postholes for the early telephone and telegraph lines to managing a contracting business known widely throughout New York State. Mr. Newman was born in Cambridge, England, Aug. 10, 1850, was educated there and came to this country when he was twenty-three years old. He arrived in New York, July 1, 1873, and just five days later was at work for the Western Union Telephone Company, mortizing the globe, digging post holes, constructing lines, and repairing the few existing ones. In 1878 he constructed the first lines and opened the first telephone exchange in Troy, N. Y. One year later, he went to work building lines for the telephone company in Albany and there had charge, also, of the District Messenger Company. In 1880, he built the Capitol District Telegraph Company which he bought two years later. He consolidated this latter company with the Albany District Telegraph Company in 1886. Many years elapsed before he made another change and this time he left low-tension work and went into the electrical contracting game. This was in 1911. Business increased rapidly and within two years he decided it would be better to incorporate the business. This was done, Mr. Newman becoming president and treasurer, while his son, F. H. Newman, assumed the duties of secretary of the firm. In addition to a contracting business, the company has built up a splendid volume in appliances, radio sets, and radio parts. For many years its head has been a member of the national, state, and local associations of electragists. He has also been active in the Albany Chamber of Commerce and the Kiwanis Club.

An Analysis of the 1925 Code Changes (*cont.*)

Prepared by ROBERT A. GOELLER
Vice President Hatzel & Buehler, Inc., New York

ARTICLE 8

AUTOMATIC PROTECTION OF CIRCUITS AND APPLIANCES: CUTOUT BASES, FUSES, CIRCUIT BREAKERS: PROTECTION OF WIRES, CIRCUITS, MOTORS: GROUND DETECTORS, OTHER APPLIANCES.

801. Cutout Bases

a. "Rosettes" before attachment plugs has been omitted, this being superfluous as paragraph "m" of section 805 does not permit the use of fused rosettes. After "attachment plugs", "car lighting cutouts" has been added so as to also specifically omit them from the requirements of these rules. The second sentence has been re-worded as follows: "Cutout bases for link fuses shall be approved only in capacities above 300 amp.," meaning, of course, that enclosed fuses must be used for capacities below 300 amp. This is a very important change. "If the copper fuse tip etc." has been changed to read "If the fuse tip etc." so as to eliminate the inference that the fuse tips must be of copper, whereas they may be of any approved metal. In the spacing table data for link fuses of 300 amp. and below have been omitted consistent with above change. For link fuses on lines not over 125 volts, the new ampere capacity range is 301 to 1500 instead of 301 to 1000 as formerly and the "Minimum separation of nearest metal parts of opposite polarity" and "minimum break distance" have each been changed from 1¼ in. to 1½ in. For link fuses on lines not over 250 volts the ampere range has also been increased to 301 to 1500 and the "Minimum separation of nearest metal parts of opposite polarity" has been changed from 2½ in. to 2¾ in.

802. Link Fuses

a. This is a new paragraph and covers the change in the use of link fuses and does not permit their use on sizes of 300 amp. or less.

b. This is old paragraph "a".

c. This is old paragraph "b".

IT is essential that a contractor not only knows the changes made in the National Electrical Code this year but that he also understands why the changes were made so that he can be sure of his work. It was with this thought in mind that the author has compiled these notes. They will appear serially first in THE ELECTRAGIST, last month's installment and that for this month taking the changes up through Article 8, and after that they may be had in booklet form.—EDITOR.

803. Enclosed Fuses

a. "Rosettes" have been omitted as in section 801 a. After "car-lighting cutouts, a comma has been added, the "and" following thereafter, is omitted in its place there has been inserted "nor to." In the "Table of dimensions of the standard cartridge fuse," form 1 ferrule contact on fuses "Not over 600 volts" and of "Rated capacity amperes," 401-600 and under column c "Width of contact clips—inches" the dimensions of 2¼ in. has been changed to 2 1/8 in. This change make the ferrule or knife blade contact slightly smaller than the ferrule or knife blade of fuse and consistent with the design of other sizes.

805. General: Fuses and Circuit Breakers

a. An additional sentence has been added to cover the use of circuit breakers having one pole in a grounded wire and provides that in this case it shall "simultaneously open all the other wires of the circuit" so as to avoid the hazard of opening the grounded wire, particularly in the case of 3-wire circuits having a grounded neutral, also to assure that the grounded wire of a circuit shall not be interrupted so long as the other conductors are connected to the supply circuit. The footnote has also had a sentence added referring to sections 808 and 809 for use of fuses and circuit breakers on motor circuits.

b. This is a new paragraph and has been added to cover the approval of various types of fuses and circuit breakers for specific application and capacities. The term circuit breaker is also clearly defined in the second sentence.

c. This is old paragraph "b" modified as follows: "A fuse or circuit breaker shall be placed at every point where a change is made in the size of wire," has been changed to read "A fuse or circuit breaker shall be placed at every point where a change is made in the size of *an ungrounded wire.*" From this it may be inferred that the grounded wire may be changed in size without fuse protection although the other ungrounded wires must be fused where this change occurs. Thus a feeder may be tapered down in size as the load decreases on it, such changes in size being protected by fuses in the ungrounded wire while the grounded conductors would be connected solid at the point of change.

d. Old paragraph "c" is modified as follows: "A fuse" being changed to "NO fuse", while the "NOT" after "SHALL" has been omitted. The phrase "except as called for in section 807 of this Code" has been changed to read "except a circuit breaker which simultaneously opens all conductors of the circuit and except as provided in sections 807 and 808 of this Code." Paragraph "b" of section 807 provides that fuses shall be installed in a branch circuit grounded neutral conductors under certain conditions. (See explanatory note that section). Section 808 b. second sentence provides on motor circuits that a fuse or circuit breaker shall be omitted in any grounded wire.

e. This is a new paragraph and covers the enclosure of cutout bases, circuit breakers, and fused switches, except where the omission is specifically permitted. The question of enclosures for such equipment is no longer dependent

upon the interpretation of whether same is exposed to mechanical injury, etc. and are now required in general wiring practice.

f. This is a new paragraph and covers the installation of cabinets containing fuses and switches in a vertical position and requires special permission for mounting these devices horizontally on ceilings and also notes the necessity of guarding against the fuses falling out or the switch opening when so mounted.

g. This is the old paragraph "f" modified. In place of "fuses" the term "cutout bases" has been added to bring them within the scope of this revised paragraph. The wording is now such that where moisture is present an approved weatherproof cabinet or cutout box shall be provided whether indoors or outside and makes this paragraph much less subject to conflicting interpretations.

h. With a few modifications and additions, this is the same as paragraph "e". "Fuses" are replaced by "cutout bases" as in "g". "Or in the immediate vicinity" has been changed to read "nor in the vicinity"; the word "immediate" is hard to define in case of controversy and it would seem that its omission broadens the scope of the rule. "Stuff" has been changed to "materials". One sentence now defines the requirement in case of combustible flyings, etc. while the last one specifically give the requirements where exposed to mechanical injury, thus clarifying the paragraph considerably.

i. Incorporated in this paragraph is old paragraph "g", modified as follows: "Except as provided in sections 808" now reads "Except as provided in sections 807, 808 and 809". "A fusible cutout" is omitted and in its place this wording has been added "A fuse of a rating which properly protects the wires". Section 807 has been added to be consistent with section 807 g., concerning Nos. 16 and 18 fixture wires which can be protected by fuses above the rated capacity of conductors of this size as given in section 610 e. Table No. 1. Likewise section 809 has been referred to because 809 f. permits fuses of 500 percent of the motor rating to protect motors during starting period and naturally the conductors are thereby overfused during this period. The new phrase "a fuse of a rating which properly protects the wire" now clearly defines the requirements in this respect where the circuit breaker is set above the allowable percentage of the rating of the conductor.

j. This is old paragraph h.

k. This is old paragraph i.

l. This is old paragraph j.

m. This is old paragraph k.

n. This is old paragraph l.

o. This is old paragraph m. with the following exceptions: "Below" has been changed to read "in the following table" and the tables have been elaborated to conform to modern engineering practice. Thus in the new table the various systems are enumerated first and each is defined relative to the grounding connection provided. Thus under "3-wire 3-phase A. C. systems" two references are given for "ungrounded or with one conductor grounded" and the other "with neutral grounded". On the former the number of overload protective devices are the same as given in the old table while in the latter three trip coils are required or in lieu of this two trip coils and one fuse. On this system it is readily understandable that short circuits to ground could occur on any of the three phases, thus the necessity of protection in each ungrounded leg.

Four wire 3-phase A. C. systems have not been changed except that the addition of a fuse in lieu of one trip coil can be provided.

Four wire 2-phase A. C. ungrounded systems have been clearly defined to provide two trip coils, one in each phase, while 3-wire 2-phase systems are required to have two trip coils, one in each outside wire. This is the same as the old table. Additional reference has been added covering 4-wire 2-phase A. C. systems with grounded neutral and in this case one circuit breaker and one fuse can be used in each phase and at least a protective device in each ungrounded wire.

A further reference has been added to cover 5-wire 2-phase systems which are used extensively in some sections of the country and the protection required is the same as for 4-wire 2-phase systems with grounded neutral.

Two wire A. C. or D. C. systems have been more clearly defined, the two old references thereto have been combined and a new reference has been added to cover the protection necessary on the two outside wires where either one may be short circuited to a grounded neutral, which is liable to happen where the two outside wires are used separately for power and where they are also combined with a grounded neutral to form a three wire conventional Edison lighting system.

p. This paragraph has been added to cover the requirements of trip coils or fuses in all ungrounded wires with a reference noting certain exceptions in the case of branch circuits.

q. This paragraph supplants old paragraph "n" except the wording "paragraphs l and m" has been omitted and in their place there has been added "nothing in this section," etc.

806. Services

e. This paragraph has been changed slightly to be consistent with section 401 b. and 405 k. in that the phrase "in risks having private plants the yard wires" has been changed to read "in properties having generating plant or which are served by a master service, the wires, etc." Also after "Provided the next fuse" there has been added "or circuit breaker". The conclusion of this paragraph has been somewhat modified also, "the wires inside the building in question" being changed to read "the wires inside buildings". To cover the switching control of services mentioned above, a new paragraph has been added which clearly defines these requirements.

f. As there has been considerable differences of opinion concerning the rules covering the wiring of out buildings such as garages; particularly when it is desired to control them by three-way switches from both buildings, this paragraph was framed. It should be noted that under such control the current is limited to the capacity of the switch and to a further maximum of 15 amp.

807. Fuses For Lighting and Appliance Branch Circuits

a. To "Branch circuit," "Outlet," has been added "Appliances" etc. and each is separately defined in a sub paragraph. The definition of "branch circuit" is practically the same although the wording "final set of fuses or circuit breakers protecting etc." has been changed to "final fuse or fuses protecting it." A separate paragraph has been added referring to section 808 for particular references to motor branch circuits. The sub paragraph defining outlets has been made much more comprehensive. Thus the addition of "fixed point" should eliminate many of the differences of in-

terpretation that have occurred in the past concerning just what an "outlet" is. The second sentence clearly defines that multi-socket fixtures are considered as one outlet, while the third and last sentence clears another mooted point by providing that multiple receptacles installed at an outlet shall be counted as one outlet. The sub paragraph defining "appliances" is entirely new and defines that type of current consuming devices which is sold to the general public for connection to the conventional 15 amp. branch circuit through the medium of attachment devices such as receptacles, etc., which are connected to such branch circuits.

b. This is old paragraph "b" modified and, instead of requiring permission to omit the fuses in the grounded conductor of a branch circuit, it now specifically provides that they shall be omitted, except that the paragraph provides that under certain conditions the fuse shall be required regardless. To give an example where a fuse in the neutral wire is imperative, take for instance the case where 110 volts is sometimes obtained from 220 volt 2 or 3-phase power systems for lighting purposes, through a balance coil; now let us assume that in order to balance the lighting load, let us say on a 3-phase system, three balance coils are used, one connected between each phase; by making a diagram of such an arrangement, it will be noted that the neutral point of one of the balance coils can be grounded, but should one of the neutral points of the other balance coils be grounded, it will be clearly seen that a short circuit through one half of each balance coil so grounded will occur. Comprehending the foregoing, should the neutral fuse of the branch circuits connected to such a system be omitted, and through a fault, first one neutral wire connected to one balance coil become grounded, then later another ground should occur on a neutral wire connected to the balance coil across another phase, it is obvious that a short circuit through ground would have been created and as there were no neutral fuses provided the branch circuit wires would be entirely unprotected and liable to exceptionally heavy currents, representing a great hazard.

It should also be noted that this paragraph now encompasses the use of circuit breakers on branch circuits presumably to cover the development of this type of protection.

c. While a new paragraph it is in reality the last sentence of paragraph "b" and concerns the use of fuses in both wires of a branch circuit on ungrounded systems.

d. To cover the mention of circuit breakers in paragraph "b" this paragraph has been added to provide that if they are used on branch circuits "they shall be of a type specifically approved for this purpose."

e. This is old paragraph "c".

f. This is old paragraph "d".

g. This is old paragraph "e" except that in the footnote "convenience outlets" in brackets has been broadened and now reads "appliance or convenience outlets".

h. This is old paragraph "f".

i. This is old paragraph "g".

j. This is old paragraph "h".

k. This is old paragraph "i".

808. Protection of Motor Circuits

a. This is old paragraph "a" except that the words "the actual size to be determined etc." have been omitted at the end of the sentence. The foot-notes under old paragraph "e" have been removed, revised and added under paragraph "a". The logic of this change is obvious for it in reality lays a foundation for the rules that follow. In the revision of the foot-note nothing has been added except to provide for a clearer exposition of the matter of motor starting currents.

b. This is old paragraph "b" and "d" combined, and somewhat modified. Thus where the old paragraphs provided that under appropriate conditions a protective device could be omitted where a branch tap for a single motor could be reduced to one-third the size of mains and extend for a maximum distance of 15 ft. to the motor protective device, the distance has been increased to 25 ft. broadening greatly the practical application of this method of construction. The omission of protective devices in permanently grounded motor circuits and the interlocking of the poles of a circuit breaker in the grounded conductor with the other poles is definitely provided and is consistent with section 805 a. referring generally to circuit breakers.

c. This is old paragraph "c" and its revision gives a much more comprehensive explanation of the use of table c of section 610 in determining the size of rubber covered or varnished cambric conductors which supply motors having large initial starting currents.

d. This is a new paragraph and is consistent with section 805 i. in that it specifies the setting of circuit breakers for protection of conductors. It will be re-called that old paragraph "d" is now incorporated with paragraph "b".

e. This is old paragraph "e" reworded and there is one important change made, in that the fuses next back on the line protecting motors during their starting period, where the motor protective device is shunted out of circuit, has been changed from 300 percent to 500 percent of the motor name plate rating. This change gives greater latitude in the size of motors grouped on a common feeder when their protective devices are shunted during starting. As previously mentioned the foot-note under old paragraph "e" has been added to paragraph "a".

f. In this new paragraph the question of protecting the push button control wires, termed shunt circuits for remote control motor controllers, is covered and it is evident that this new paragraph will eliminate almost entirely the disputes arising from the fact there had been no specific rule covering this question in the previous codes. In the 1923 Code through error as mentioned in errata thereto, two paragraphs were lettered "e", although the latter one should have been lettered "f". It is interesting to note, however, that this paragraph has been omitted entirely from this portion of the Code as presumably in it has not direct reference to automatic overload protection but to phase reversal protection only. Consequently this paragraph is now placed under section 1003 j.

809. Protection of Motors

a. In order that attention may be called to exceptions regarding the protection of other than continuous rated motors and continuous rated motors of 2 HP or less in the rules to follow rather than to leave them till last and thus possibly be overlooked, old paragraphs "h" and "i" have been combined to form a new paragraph at the outset.

b. Old paragraph "e" has been revised and incorporated under new paragraph "b". In the first sentence "shall be protected by running fuses" has been changed to read "shall be individually protected by fuses" and following "relays" the term "or a circuit breaker"

now reads "or by a circuit breaker". There has also been added three exceptions lettered a, b and c, which help to a more complete understanding of the subject rules. In the sub-paragraphs that follow there are several new ones making a total of nine in all. In the 1923 edition of the Code only four sub-paragraphs were provided. Old sub-paragraph 1 has been revised and the mention of thermal cutouts has been omitted confining this paragraph to fuses alone thus the wording that they are to be used "for the running protection of motors" and "a fuse shall be placed in each ungrounded conductor" clarifies the paragraph considerably.

Sub-paragraph 2 is entirely new and embodies the sense of the first part of old paragraph "b" regarding the grouping of small motors under a single set of fuses except that the limiting wattage has been raised from 1200 to 1320. It should also be noted that this paragraph permits under the conditions outlined, the use of other current consuming devices on the same circuit, and by so doing clears up a question never clearly defined in the 1923 Code. Its inclusion should also permit of a more economical wiring job in many instances.

Sub-paragraph 3 covers the rating of thermal cutouts for motor protection and has been extracted from old sub-paragraph 1 and re-worded for clarity.

Sub-paragraph 4 combines that part of old paragraph "b" pertaining to the size of fuses next back on the line which in turn protect the thermal cutouts. Due to time lag of thermal cutouts the current values could rise to considerable magnitude under severe circuit conditions such as short circuits, stalled motors, etc. and thus when the thermal cutout functioned, it is entirely possible that in interrupting the circuit the currents would be far in excess of its designed interruption capacity, and by limiting the size of fuse protecting the thermal cutout it is to be conceived that under sudden heavy overloads the interruption would probably be made by the fuse rather than the thermal cutout. The enclosing of these cutouts is also specifically required now.

Sub-paragraph 5 covers the grouping of motors having thermal cutout protection grouped on a single feeder and as varying size thermal cutouts might require a corresponding variation in the protecting fuses. This sub-paragraph definitely requires that one set of fuses protecting two or more thermal cutouts grouped thereunder shall not exceed the marked rating of the fuse required by the smallest thermal cutout.

Sub-paragraph 6 extracts the ruling on overload relays from old sub-paragraphs 3 and 4 and places them comprehensively under one sub-paragraph.

Sub-paragraph 7 is a revision of old paragraph "c" and it is apparent that the feeling still exists that circuit breaker overload trip devices are still susceptible to unskilled manipulation and therefore cannot be used without supplementary fuses being also provided, except under the conditions specified where it is assumed that unskilled handling of the circuit breakers is unlikely.

Sub-paragraph 8 is that portion pertaining to circuit breakers under old sub-paragraph 3 and 4.

Sub-paragraph 9 is new in respect to this section in that it permits the use of a single pole circuit breaker in one leg and a fuse in the other for D. C. and single-phase motors. It is obvious that while this practice is permissible for the above, it could not be applied to 2 or 3-phase motors with safety as there would be no means of interlocking the fuse and circuit breakers which would make possible the opening of one at a time thereby permitting the motor to run single phase. It should also be noted that in the case of grounded conductors one of the poles of the circuit breaker can be in this leg provided it "cannot be opened without opening simultaneously all of the conductors of the circuit". This latter wording changes the requirements of the 1923 appendix as given in the footnote under PI-pages 161 and 163 and P2, pages 164, 167 and 169 as follows: "Note—A switch or overload protective device must not be placed in a grounded wire of a motor circuit". This revision eliminates a rule (if the appendix could be considered as such) that would have given considerable trouble if enforced during the life of the previous code.

c. For the number of overload trip coils, relays or thermal cutouts required for motor protection, the reader is referred to section 805 "o.", thereby indicating that the protection of motors and motor circuits does not differ from general circuit protection.

d. The regulation concerning D. C. controllers in the last sentence of old paragraph "d." has been removed and set up as a new paragraph.

e. This is a clarification of the fore part of old paragraph "d" concerning the use of A. C. motor controllers serving as an automatic overload protection device.

f. The revision of this paragraph eliminates any mention of protection of the motor branch circuit, confining itself strictly to the protection of the motor. It should be noted here also that the protection of the motor during the starting period under the conditions mentioned has been raised from 300 percent to 500 percent, consistent with a similar change in 808 "e." and 809 "b.", sub-paragraph 7.

g. The old paragraph "g" is ambiguous in respect to the shunting of the protective device during starting and is therefore omitted entirely. A footnote has been added in explanation of the reason for shunting of motors during the starting period.

811. Protection of Electrically Heated Appliances

The term "heating appliances" in the caption has been changed to read: "electrically heated appliances".

a. The wattage of appliances under this paragraph has been raised from 1200 to 1320 and the mention of "10 amperes" is omitted entirely in both sentences. Each complete electrically heated appliance over 1320 watts is required to be supplied by a separate branch circuit, instead of 1200 and, of course, consistent with the previous wording.

b. The term "heater" has been changed to read: "Electrically heated appliances"; this paragraph is also covered in section 1602h. in greater detail.

814. Protection of Switchboard Instruments

a. It is apparently to correct the inference that there are "approved enclosed fuses" other than N. E. Code standard that this paragraph has been reworded and its wording now provides that other than N. E. Code standard enclosed fuses can be used to protect switchboard instruments if of 2 amp. or less.

816. Ground Detectors

This section is omitted entirely and it is presumed that it is due to the extensive spread of grounding practice throughout the country thereby limiting the application of ground detector devices.

Estimating for Electrical Contractors

Lesson No. 10—Labor Cost Records and a Labor Cost Control System

BY ARTHUR L. ABBOTT
Technical Director, Association of Electragists

NO estimator who takes his work seriously is ever satisfied with his knowledge of the subject. He wants, first, full and complete data which will enable him to make accurate estimates; then he wants to know on each individual job how the actual labor costs compare with his estimate; and finally he is interested in comparing the average rates of production on his own work with the rates secured by other contractors, both in his own locality and elsewhere.

The live estimator is an investigator. The extent of his investigations is, however, very definitely and decisively limited by the cost of keeping records. It is important, then, in keeping labor cost records to get the highest possible value in return for the time and money expended. If the dollars-and-cents value returned can be made to exceed the cost of the records, then the record-keeping becomes profitable.

Labor cost records are most commonly kept for the sole purpose of securing estimating data.

Data in Man Hours

In order that the data secured may have the highest possible value, or indeed any permanent value, it is, first of all, important that the data should be in terms of man-hours instead of in terms of dollars. A large amount of time, effort, and money has been wasted in securing data which was recorded in terms of dollars and which in consequence is now practically worthless on account of changes in wage rates.

An equally important requirement is that the amount of work done and the conditions under which it was done must be clearly and definitely stated. This requirement can be most easily and simply fulfilled by recording all data in the form of percentages of the labor units published in these lessons: For example, if it be stated that on a school building having class B floors, the job factor being 20, the time in man-hours for installing branch circuit conduit work was 107 percent of the time computed as per the tables, we have a perfectly definite statement. This means that all factors and conditions affecting the labor have been taken into account —the quantities of pipe of all sizes, ceiling outlets, wall outlets, and pipe entrances, the size and character of the job and the conditions under which the work was done. As an extreme case, compare this with the bald statement that in a school building having class B floors 10 man-hours was required per 100 ft. of ½ in. and ¾ in. pipe. Such a record has some value to the members of the organization who installed the work, as long as they can retain in their minds all characteristics of this particular job, but this value will diminish rapidly as time passes, because there is no complete record in permanent form. The record is practically valueless to anyone outside of the organization which did the work because of its incompleteness, and for the same reason data of this nature has no cumulative value.

The details of the system for keeping a complete job labor record may be worked out in various ways. A plan which has been used with good results is as follows.

How to Keep Records

The job foreman is made responsible for making out a daily report or time card for each man on the job. He is furnished with a typewritten or printed list of all operations which are to be separately recorded, and the daily reports show the distribution of each man's time to these operations. The total time for which a man is paid must of course be accounted for. The daily reports are sent in to the office and are there compiled on suitable forms, simply totalling the time on each operation. At the end of the job the material quantities are ascertained from the regular job cost system and the labor units are computed.

One modification of this plan consists of furnishing to the job foreman a blank book which he keeps until the job is finished and in which he makes daily entries of the distribution of labor. It is doubtful whether this method will ever produce as good results as the one previously described, in which the daily records are turned in immediately to the office. Many errors and discrepancies will be found in these daily reports which can be corrected if given immediate attention.

Labor Cost Control

Many contractors have seen the desirability of records which will not only produce labor data for estimating, but will also provide a continuous check on the labor during the progress of the job. The principle of such a system is simple; we merely add to our daily reports a record of the amount of work done, then we can make up a daily, weekly or monthly statement of the hours per unit on each class of work. The estimated time for any class of work is the maximum time in which that work should be done. The estimated time per unit therefore becomes a standard with which the actual time per unit should be compared in order to know whether or not the labor costs are keeping within the estimate.

The selection of the proper unit of measurement for each class of work is an important matter, especially in the case of the branch circuit conduit work, which is the largest single item of labor on the ordinary job. In seeking for a means of measuring the amount of this kind of work done in a day by a crew of men, one naturally thinks first of the feet of pipe installed per day. The feet of pipe installed per day can be used to measure the work done, as will be explained, but it is not sufficient to assume that 100 ft. of pipe always represents the same amount of labor in all portions of the building. When this assumption is made, it is almost invari-

ably found that the hours of labor per 100 ft. of branch circuit conduit is very low at the beginning of the job, and keeps constantly rising, so that the actual labor per unit is not known until this class of work is completed.

The method can best be explained by referring to an actual job as an example. The job selected is a school building having a floor area of 12,000 sq. ft. per floor, three stories high, the total amount of the wiring contract being about $4600.00.

We find first that there are three distinct types of construction. The second and third floors are of the "steel pan" type, in which the pans are used as forms and removed after the concrete has set. At each ceiling outlet the building contractor omits the pan so that it is not necessary to cut a hole through the pan. Most of the third floor has a suspended ceiling, and the corridors on the first and second floor also have suspended ceilings. On the third floor there is an auditorium in which the ceiling is wood and the conduit work is to be run exposed here. We therefore have three different classes of "floor work," and it is reasonable to assume that the work will proceed in such a way that it will be entirely practicable to record the labor on each of these three classes separately. The partition work will be a separate operation, making four different classes of branch circuit work.

Taking Class 1, the work in the steel pan floors, we find that this includes (1) pipe, of two sizes, (2) ceiling outlets, (3) ceiling pipe entrances, (4) extending conduits down through the floor construction for future connection to switch outlets or other outlets in walls. Note that this is a perfectly definite amount of work, and that these four items include all the work that must be installed in this floor construction. The total labor can be computed from the estimate and is found to be 227 hours.

If, now, we divide this total labor by some suitable unit of measurement, we will have the average labor per unit. It would be possible to use 100 sq. ft. of floor area as a unit of measurement, in which case we would determine the average hours labor in this class of floor per 100 sq. ft. This would be somewhat cumbersome and not very accurate. Or we might determine the total feet of pipe and divide the total hours by this, thus arriving at the hours labor per foot of pipe or per 100 ft. This plan is open to the objection that it is a difficult matter for the job foreman to make an accurate report of the feet of pipe installed per day, and would require too much of his time. We need a unit which will enable us to keep an accurate record with the minimum amount of effort; the outlet box fulfills these requirements. There are in this class of floor, 136 ceiling outlets. $\frac{227 \text{ hours}}{136} = 1.67$ hours, hence the standard, or estimated, time per outlet is 1.67 hours.

Computing the standard time for the other classes of work in the same manner, we have for Class 2, the suspended ceiling work, 151 hours, 88 outlets, $\frac{151}{88} = 1.72$ hours per outlet; for Class 3, the auditorium ceiling, 51 hours and 15 outlets, $\frac{51}{15} = 3.42$ hours per outlet; for Class 4, wall work, 181 hours, 166 outlets, $\frac{181}{166} = 1.08$ hours per outlet.

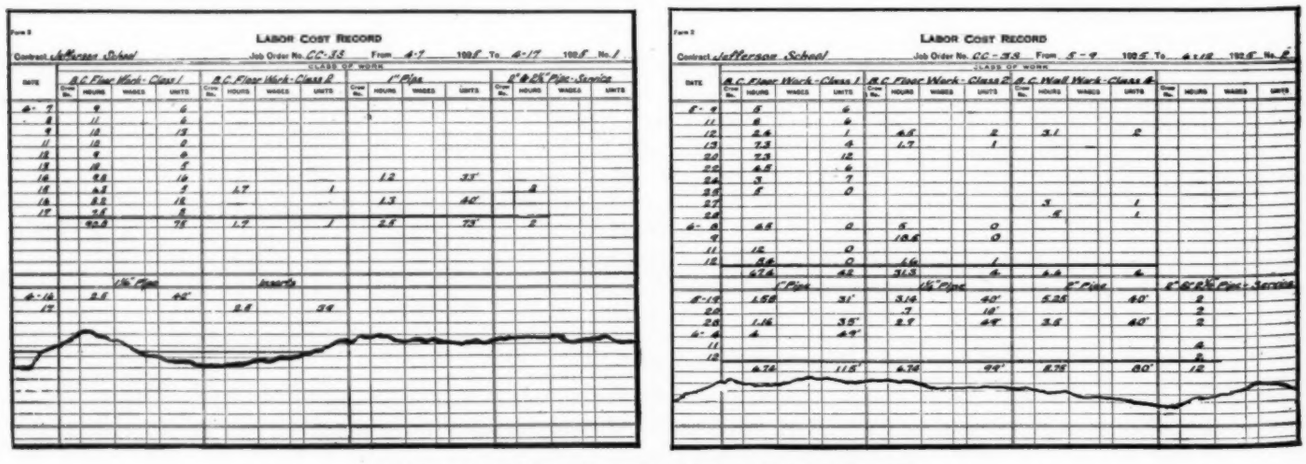
The job foreman is provided with several sets of blueprints of the floor plans. At the end of each day he draws a circle with a red pencil around each of the outlets installed and turns in the print to the office, together with a time card showing the hours labor.

The outlets installed and hours of labor are recorded each day, and totalled at stated times, preferably once every two weeks. If during a two weeks period the total time on Class 1 was 67.5 hours and 42 outlets were installed, this is compared with the estimated labor as follows:

The estimated, or standard time per outlet is 1.67 hours. The actual time was $\frac{67.5}{42} = 1.60$ hours per outlet.

$\frac{1.60}{1.67} = .96$ The actual labor is therefore 96 percent of the estimated labor. The gain or loss in dollars as compared with the estimated cost can easily be computed if this information is desired.

Other classes of work are handled in much the same manner as the branch circuit conduit work. In every case the workman is asked to record the work done in the way which will require the least of his time and which will give the most accurate results. On large pipe, he is provided with a riser diagram having each run of pipe numbered, and he is required to state the time spent on each run and the time when the run was completed. The feet of pipe installed per day is to be stated approximately, but this is not so important. Usually a standard time per 100 ft. is computed for each size of large pipe, taking into account the feet of pipe and the number of elbows, terminals and bends. Labor on large wire is handled in a similar manner. The time is divided between


LABOR COST RECORD
Contract Jefferson School
Job Order No. CC-35
From 4-7 1925 To 4-17 1925 No. 1
CLASS OF WORK
E.C. Floor Work - Class 1
E.C. Floor Work - Class 2
1" Pipe
1" & 1¼" Pipe - Service
½" Pipe
Inserts
LABOR COST RECORD
Contract Jefferson School
Job Order No. CC-35
From 5-9 1925 To 6-1-25 1925 No. 2
CLASS OF WORK
E.C. Floor Work - Class 1
E.C. Floor Work - Class 2
E.C. Wall Work - Class 4
1" Pipe
½" Pipe
2" Pipe
1" & 1¼" Pipe - Service

Sheets 1 and 2 of Form 2 Showing Original Records

the various runs and the report states which runs are completed. For each size of wire a standard time is computed per 1000 ft.

In the case of small wire, push or tumbler switches and flush receptacles the workmen are asked to keep records of the quantities installed each day, because this can easily be done. Each cabinet and each panelboard represents enough work so that it is entirely practical to report the time on each as a separate item.

Motor work involves placing the motor in position and securing it there, installing conduit, pulling in wire, and installing the starting apparatus and making connections. The time on each of these four operations should be recorded separately for each motor if the work is done in such a way as to make this separation possible.

The labor on the installation of low tension apparatus should be separated between operations to such an extent as may be practicable.

Some time is required to distribute the branch circuit labor to the various classes of work and to compute all the standard times, though a number of approximations can be made which materially lessen this time. After these preliminary calculations have been made, only a small amount of time is required for keeping the records.

A record system which furnishes a running check on labor costs is properly called a Labor Cost Control System. While the system itself does not control the labor costs, with the knowledge of labor costs which it provides the costs are controlled almost as a matter of course. It may be considered as practically certain that the increased labor efficiency resulting from the operation of the system will much more than offset the cost of the clerical labor and supervision which the system will require. The labor data produced is extra value thrown in for good measure.

Sheets 1 and 2 of Form 2, reproduced here, are the original records of a small job for two periods as made up from the foreman's reports. Sheets 1 and 2, of Form 3, are the recapitulation sheets for the same periods.

Referring to Recapitulation Sheet No. 1, the period covered being the beginning of the job, there is no previous work to be shown. At the end of the second period, all classes of work done during this period are first indicated at the left side of Recapitulation No. 2. The amount of work on each of these classes during the first period is taken from the No. 1 Recapitulation and entered in Column A, and the amounts from No. 2 sheet of Form 2, the work done during the second period, are entered in Column B. The entries made in Columns A and B are then added together to find the total work done to date, Column C.

In exactly the same manner the previous hours, hours this period and total hours to date are found and entered in Columns D, E and F.

The hours per unit for this period, Column G, are, of course, found by dividing the hours for this period, Column E, for each class of work by the units of work done during this period, Column B. The corresponding figures for Column H are similarly obtained.

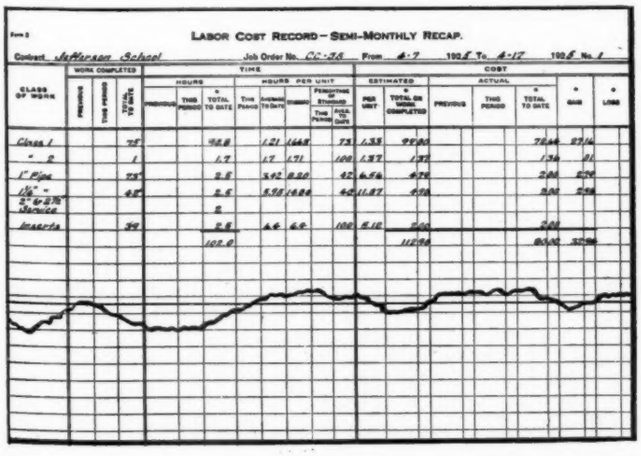
The standard hours per unit for each class are then entered in Column J. Columns K and L show the comparison between the actual times and the standard times.

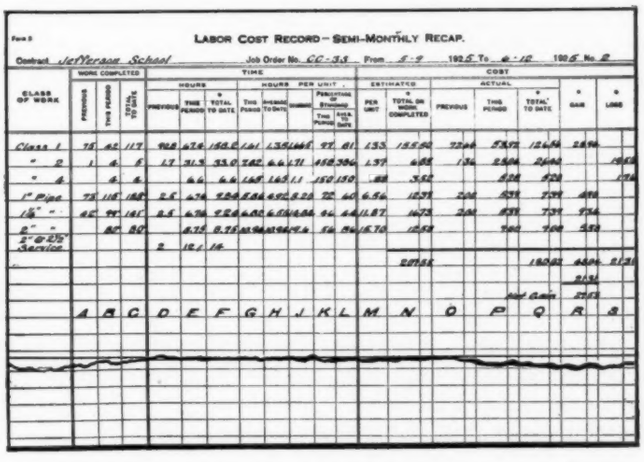
Column M is the estimated cost per unit. The estimated labor cost per hour on this job was 80 cents, so the estimated cost for each class of work is 80 cents multiplied by the estimated hours as shown in Column J. Figures in Column N are easily computed from the number of units, Column C and the estimated cost per unit, Column M.

It will be noted that the wages were not recorded on the two sheets of Form 2. If the actual wages paid had been recorded, Column O and P would have been filled in from their records. In order to make the recapitulation sheets complete, the labor costs have been filled in assuming a uniform wage of 80 cents per hour.

The difference between $155.50, the estimated cost of the Class 1 work completed, and $126.56, the actual cost of this work, is the gain, amounting to $28.94, or in other words, on 117 units of Class 1 completed up to date, the actual labor cost has been $28.94 less than the estimated cost.

The real purpose of the Recapitulation Sheet is to provide a convenient means of arriving at the figures in Columns K and L and Columns R and S. Columns K and L show in the form of percentages a comparison between the estimated time and actual time on each class of work, both during the period covered by the sheet, and since the beginning of the job. Columns R and S show in the form of gain or loss a comparison between the estimated and actual labor cost on each class of work. This is the data which is essential if the contractor wishes to keep fully informed in regard to labor costs on the job.





Recaption Sheets 1 and 2 for Same Period as Original Records on Opposite Page

The Electragist

Official Journal of the
Association of Electragists—International

S. B. WILLIAMS
Editor

The New Spirit

A FEW days have passed since the big Twenty-fifth—time in which to have one's impressions gather form without the distorting influence of immediate details. It was the biggest convention of the Association of Electragists, International; biggest in point of attendance, enthusiasm, accomplishment and ideals.

The attendance this year was not only larger than ever before, it was different. Past years the delegates have come largely from the "old guard", as they are affectionately called; the men who can be counted on to be at the convention each year. For them, this annual meeting is more than just a convention—it is a reunion. The new men who came this year, and they came in large numbers, brought with them the boundless enthusiasm of freshmen at college. And it spread, this enthusiasm, with the result that the convention was in the mood to get things done.

Not only did it get things done but it passed resolutions that conventions of a few years ago might have deferred for further study. In other words the convention, while taking advantage of the wise counsels of the members whose years of experience in Association matters gave them the ability to foresee results, was unwilling to procrastinate. Its resolutions, which will be found elsewhere, are, as a whole, of a different temper from those of previous conventions. They are indicative of the serious purpose of the contractor and dealer industry.

This industry of ours may not be any different than it was a few years ago, but it is assuming a new importance. It has for years been kicked from pillar to post—it has been scorned as the lowest of the low—it has been called unprincipled. But no more!

To any one attending the sessions of the convention, there must have come a feeling of deep respect for the profession. Men of large and men of small volume of business and experience, men from California and men from Florida gave voice to the fundamental ideal of the profession—Public Service.

One heard little of the bitterness against other branches of the industry this year. The sessions for discussing inter-trade relations were closed to all but contractors and dealers, yet the keynote of the discussion was the necessity of doing a better job of serving the public. If only the public is sold a more adequate job of wiring there will be less incentive for the jobber and manufacturer to go direct to the public.

When an industry like ours becomes imbued with the idea of Public Service there is nothing that can stop its progress. The American public enjoys today the best wired homes in the world, but if the spirit of the convention is at all indicative of the point of view of the contracting profession at large, the American home of tomorrow will truly be a "home electric."

While the convention was the largest on record, it is too bad in a way that even more could not have attended. The exhibits of the manufacturers were particularly worth while this year, there were men from so many different sections of the country that one could have his viewpoint so enrichened, the program was not so long as to be tiresome, but above all there was this atmosphere of service. Those who didn't and couldn't come lost. Those who came and breathed the spirit of the convention won.

But this year's convention is now history. Another is coming. At that time the Association will celebrate its twenty-fifth birthday. Make your plans now to attend. Lay by a small amount each week, same as you would in a Christmas fund, and when convention time rolls around you will have no financial worries.

Careless Figures

One of the best ways of proving one's case, where possible, is by the use of statistics. It is true that figures can in the hands of unscrupulous persons be made to prove most anything, but then, most people are honest, so we will make no indictment against statistics as such.

However, we do deplore the use of figures carelessly and thoughtlessly. Every now and then someone in apparently good faith uses figures that are not only absurd but have no relation.

At the convention one speaker to prove his point presented statistics on the value of electrical merchandise manufactured, jobbers' gross volume and contractor-dealers' volume of merchandise.

The figures for manufacturers' output were history years ago, the jobbers' data were probably about right, while the figures representing the volume of merchandise of all kinds handled by electrical contractors and dealers of the country

was too absurdly low even to be considered. Yet these figures were compared in order to show that the electrical contractor and dealer was doing only about a 12½ percent job for the jobber and a less than 10 percent job for the manufacturer.

The manufacturers' output included central station and electric railway equipment, it included materials used in the manufacture of other devices, it included large heavy duty industrial wiring and railroad equipment. In other words it included quantities of stuff that the contractor or dealer never by any stretch of the imagination can be expected to handle.

The jobbers' figures included his sales to non-electrical outlets which he can never be and never should be persuaded to surrender. It includes the business that he competes with his customer for. It includes the business from industrials having their own electrical department.

Yet these were the figures that were compared with strangely underestimated figures on the contractor and dealer business.

They proved nothing and they left in the minds of the audience the impression that the speaker was either ignorant of the conditions on which he was speaking or else he was unfair. As a matter of fact, the speaker was a student, a man who has and is making progress in the financial development of the contractors and dealers in his territory.

Figures carelessly gathered and carelessly used do great harm. When one is not absolutely sure of his figures it would be much better to take refuge in safe generalities.

Sell—Don't Buy the Job

There are two kinds of contractors—those who buy their jobs and those who sell them.

The first kind buys the job from the customer by bidding under his competitor. He sells nothing—he merely offers more for the job in the way of price concession.

The second kind creates in the mind of the customer the desire for a complete job by capable workmen under proper supervision backed by a house of dependability. This man sells the electrical idea to the customer.

The former takes material out of a job. He retards the progress of electrical development. The latter adds more material to a job and promotes development of the industry.

Because he has bought his job for a price the former has cut his profit. He works hard, has a lot of worry, and barely makes a living. The latter by selling the job adds a reasonable profit to his costs. He too works hard, but he has not the worry of the other fellow because he knows that he is going to make money on the job; because he knows the price permits him to do the right kind of a job and that the customer therefore is going to be satisfied and that there will be no trouble after the work is completed. He knows also, that the job will bring him more customers from amongst the acquaintances of the person for whom he is now doing the work.

The former is always complaining about poor business and the time he has to lose looking for jobs to do, and then figuring them. The latter finds that he can keep comfortably busy taking care of the work that comes in from satisfied customers and their friends.

The former has the competition from his own kind. The latter has no competition when he gets through selling a job.

The former has a customer but once. The latter never loses a customer.

Can there be any doubt as to which is the best policy to pursue? Sell your jobs—Don't buy them.

Does It Pay?

Last year a man came to the convention full of trouble. He was at the end of his rope and he came to see if he could get any help or encouragement.

He was back again this year and we asked him how he was getting along.

"Fine," he said, with a wide grin. "I brought my wife down this year".

Did it pay this man? What will help one man will help others.

The Proof of the Pudding

Time after time there have appeared in these columns exhortations to sell the customer a complete wiring job. It is best for the customer and if the customer can be made to see the logic of it, he will want the more complete job in spite of the extra cost.

We can hear someone saying now, "That sounds fine, but just try it and see how far you get."

Well, the only answer lies in proof so from this point on our argument is going to be *proof*.

In Denver, the local league has for some time been working on prospects after they had decided on their electrical requirements. (Other leagues are doing the same thing, but we happen to have Denver figures at hand.) While the recommendations for the most part were made for residences, not a few were for big buildings and the increase in wiring was considerable. Here's just a few of the things they have done:

A high school on which construction was started this year will have 214 additional outlets.

A residence layout was increased 84 percent when a total of 53 outlets were added.

In an eighty-five room residential hotel, outlets were added to the architect's original layout including 113 convenience, 58 switch, and 60 'phone outlets.

An apartment house builder, when shown the standard of wiring adopted by other builders, eagerly increased the number of outlets by 132 and later submitted the wiring layout of another apartment house he contemplates erecting.

A large hospital now under construction will have 170 more outlets than originally planned. Additional recommendations under consideration by the Building Committee call for 15 convenience outlets; 120 switches; 80 ceiling outlets and 160 radio outlets all connected to a master receiving set.

Who says it can't be done? The proof of the pudding is where?

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*Deceased
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Master Elec. Contractors' Association	F. J. Boyle	175 W. Washington St.
Decatur (C)	Earl Weattherford	114 East William St.
Peoria (C)	L. B. Van Nuys	238 So. Jefferson St.
Rockford (C)	Donald Johnson	106 North Second St.
Springfield (C)	A. D. Birnbaum	916 West Cook St.
INDIANA		
Gary (C)	A. B. Harris	570 W. Washington St.
Indianapolis (C)	R. E. Snyder	704 No. Alabama St.
Terre Haute (C)	C. N. Chess	523 Ohio Street
IOWA		
Davenport (C)	Louis F. Cory	510 Brady Street
Fort Dodge (C)	J. A. Paul	21 South 12th Street
Sioux City (C)	E. A. Arzt	211 Fifth Street
Waterloo (C)	R. A. Cole	Cole Bros. Elec. Co.
KANSAS		
Salina (C)	G. R. Pizarro	146 So. Santa Fe St.
Wichita (C)	P. W. Agrelius	Wichita
KENTUCKY		
Lexington (C)	J. H. Brock	235 East Main St.
Louisville (C)	C. L. W. Daubert	921 South Third St.
Paducah (L)	K. H. Knapp	c-o Paducah Electric Co.
LOUISIANA		
New Orleans (C)	I. G. Marks	406 Mar. Bk. Bldg.
Shreveport (C)	R. L. Norton	620 Marshal Street
MARYLAND		
Baltimore (C)	George S. Robertson	417 Park Bank Bldg.
MASSACHUSETTS		
Haverhill (C)	H. W. Porter	14 West Street
Malden (Medford, Everett and Melrose) (C)	H. J. Walton	c-o Malden Electric Co.
Springfield (C)	A. R. Tullock	11-12 Court House Place
Worcester (L)	John W. Coghlin	259 Main Street
MICHIGAN		
Detroit (C)	N. J. Biddle	478 Penobscot Building
Grand Rapids (C)	T. J. Haven	1118 Wealthy St., S.E.
Saginaw (C)	E. T. Eastman	209 Brewers Arcade
MINNESOTA		
Duluth (L)	Morris Braden	c-o Minn. Power & Light Co.
Minneaoplis (C)	W. I. Gray	209 Globe Building
MISSOURI		
Kansas City (C)	A. S. Morgan	4 E. Forty-third St.
St. Louis Electragists' Ass'n (C)	W. F. Gersner	120 No. Second St.
Electric Employers' Association (C)	G. L. Gamp	Wainwright Bldg.
NEBRASKA		
Lincoln (L)	George Ludden	1329 N Street
Omaha (L)	Isreal Lovett	c-o City Hall

(C) designates exclusively Contractor-Dealer organization.
(L) designates an Electrical League.

STATE AND CITY	LOCAL SECRETARY	STREET ADDRESS
NEW JERSEY		
Long Branch (C) (Asbury Park and Red Bank)	Austin Hurley John Caffrey, Jr. R. Marshall	Campbell Ave., Long Branch 435 Orange Street 479 Market Street
Newark (C)		
Paterson (C)		
Philipsburg (See Lehigh Valley, Pa.)		
NEW YORK		
Brooklyn (C)	H. F. Walcott	58 Third Avenue
Jamestown (C)	Henry M. Lund	309 Main Street
Nassau-Suffolk (C)	Henry T. Hobby	55 Front Street, Rockville Centre, L. I.
New York City		
Section No. 1 (C)	M. J. Levy	70 East 45th Street
Independent (C)	Albert A. A. Tuna	127 East 34th Street
Metropolitan (C)	George W. Neil	96 Beekman St.
Oneonta (C)	B. B. St. John	433 Chestnut Street
Rochester (C)	Theo. T. Benz	278 State Street
Schenectady (C)	Richard Spengler	421 McClellan Street
Syracuse (C)	Fred P. Edinger	802 East Water St.
Utica (C)	W. C. Ballda	228 Genesee Street
Yonkers (C)	Louis Mayer	485 South Broadway
OHIO		
Akron (C)	E. C. Rishel	540 East Avenue
Canton (C)	H. A. Hastings	301 New Vickery Bldg.
Columbus (L)	Ernest A. Sims	37 East Main Street
Cleveland (C)	Frank T Manahan	c-o Elec. Cont. Assn., Statler Hotel
Dayton (C)	Clarence Carey	1107 South Brown St.
Marion (C)	O. H. Cornwell	147 South Main St.
Massilon (C)	F. D. Mossop	c-o Mesco Electric Co.
OKLAHOMA		
Pawhuska	C. G. Sego	Pawhuska
PENNSYLVANIA		
Allentown (see Lehigh Valley)		
Bethlehem (See Lehigh Valley)		
Catasaqua (See Lehigh Valley)		
Chester (C)	W. H. McMillan	12 West Third Street
Du Bois (C)	C. E. Blakeslee	12 E. Long Avenue
Easton (See Lehigh Valley)		
East Stroudsburg (See Lehigh Valley)		
Emans (See Lehigh Valley)		
Hellertown (See Lehigh Valley)		
Lehigh Valley (C)	A. W. Hill	Main and Market Sts., Bethlehem
Northampton (See Lehigh Valley)		
Palmerton (See Lehigh Valley)		
Philadelphia (C)	M. G. Sellers	1202 Locust Street
Pittsburgh (C)	Fred Rebele	1404 Commonwealth Bld.
Slatington (See Lehigh Valley)		
Wilkes-Barre (L)	Ambrose Saricks	25 No. Main Street
SOUTH CAROLINA		
Charleston (L)	J. P. Connolly	141 Meeting Street
SOUTH DAKOTA		
Sioux Falls	Harry Sedgwick, Pres.	Sioux Falls
TENNESSEE		
Chattanooga (L)	P. W. Curtis	725 Walnut Street
Knoxville (L)	Jerry G. Cason	303 West Church St.
Memphis (L)	J. J. Brennan	12-16 So. Second St.
Nashville (C)	J. T. Shannon	c-o Electric Equip. Co.
TEXAS		
Beaumont (C)	J. A. Solleder	Houston & Bolivar Sts.
Dallas (C)	P. B. Seastrunk	2032 Commerce St.
Houston (C)	J. W. Read	715 Capitol Avenue
UTAH		
Ogden	B. Kristofferson	2249 Washington Ave.
Salt Lake City (C)	C. Louis Collins	215 Kearns Bldg.
VIRGINIA		
Lynchburg (C)	J. L. Fennell	c-o Fennell & App
Norfolk (L)	K. D. Briggs	227 Arcade Bldg.
WASHINGTON		
Seattle (L)	P. L. Hoadley	Seaboard Building
WISCONSIN		
Green Bay (C)	V. E. Grebel	531 S. Broadway
Madison (C)	Otto Harloff	602 State Street
Milwaukee (C)		156 Fifth Street
CANADA		
Montreal (C)	R. H. Grobe George C. L. Brassart	674 Girouard Ave.
Vancouver (C)	James Hart	323 B. C. Electric Bldg.
Winnipeg (C)	Sydney F. Ricketts	76 Lombard Street

SEPTEMBER ACTIVITIES

Camp Co-operation-V Holds Most Successful Sessions

AFTER five days devoted to constructive business sessions, interspersed with agreeable entertainment programs, Camp Co-operation V, the fourth conference of Electrical Leagues, ended on September 12 at Association Island, Henderson Harbor, N. Y. As with previous conferences, this one was sponsored by the Society for Electrical Development and the opening session found 174 conferees present. No less than 66 leagues, from all parts of the United States and Canada, as well as 11 representatives of national organizations, were on hand to add their contributions to the deliberations and otherwise aid in making the conference a success.

In addition to scheduled sessions, special meetings were held by the Board of Directors of the Society for Electrical Development; the League Council; the Red Seal advisory committees of the leagues and manufacturers; and all four branches of the fixture industry.

The usual ceremonies marked the opening of the conference on September eighth. The flag raising address was made by Earl E. Whitehorne and was followed by an official welcome in the new Town Hall by W. W. Freeman, president of the Society for Electrical Development.

The formal opening finished, a regular schedule of morning and evening sessions was adopted. In a general way the sessions were planned to cover different phases of league work each day. Thus, meetings were given over to the discussion of league progress and management, national progress through local development, and the Red Seal Plan. Presiding officers during these meetings were Earl E. Whitehorne, F. M. Feiker, T. C. Russell, Kenneth A. McIntyre, O. Fred Rost, Miss Katherine A. Fisher and W. L. Goodwin.

Throughout the entire convention, the desire to develop an even more active working co-operation between the contractor-dealers of the country and various already formed leagues was everywhere in evidence. Even the advertising policies were discussed with a view of making all publicity react to the best advantage of local dealers.

Enthusiasm was shown by the conferees at the Red Seal Plan meeting to which the entire session on Friday morning was devoted. Kenneth A. McIntyre and W. L. Goodwin covered both the historical phase of the development of adequate wiring and the many advantages to the electrical industry as a whole.

Many interesting reports of progress under the plan were made by representatives of the individual leagues and, at the close of the session, George W. Austen, secretary-manager of the Electrical Service League of Toronto, was presented with a set of resolutions in recognition of his service to the electrical industry as originator of the Red Seal Plan.

A distinct spirit of optimism for the future prevailed throughout the convention and all indications point to many additional leagues before Camp Co-Operation VI next year. Every effort was made this year to avoid cut-and-dried plans for the new leagues which because of difficult requirements might be handicapped because of the wide difference of local conditions throughout the country.

The Resolutions Committee presented through the chairman, Stanley Dennis, a recommendation that the leagues get behind the movement for uniform ordinances throughout the country. It was pointed out that the individual league offers the best opportunity for the local development of desirable electrical ordinances.

The leagues represented voted unanimously to accept the recommendations of the Nominating Committee on the League Council. Accordingly, following a brief session for the purpose, J. E. North, President of the Cleveland League was elected Chairman; Earl E. Whitehorne, Vice-Chairman, and Kenneth A. McIntyre, Secretary of the League Council for the year to come.

Conferees and their guests at Camp Co-operation V were caught by the

The Ballots For Executive Committeemen Mailed

Members of the Association are reminded that nomination notices for election of members from the Eastern, Great Lakes, Mountain, and Western Canadian Divisions will be mailed from the office of the Secretary during the first week of this month. These notices, which members are urged to return promptly after indicating a nominee, are opened by the Election Committee during the first week in November, as required in Article V of the constitution.

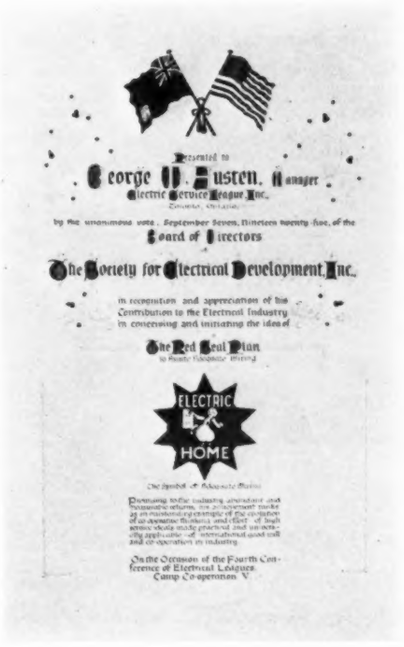
As soon as possible after the two highest nominees in each District have been determined, election ballots announcing them, and showing the number of nominating ballots received by each, are forwarded to members to be voted upon for election. During the week of December 10, the Election Committee will determine from the ballots, that have been returned, the new members of the Executive Committee, who will take office on the first day of the following January.

Members will recall that the Executive Committee is composed of eleven members and that four of the Districts elect their representatives every second year. Thus, a portion of the Executive Committee remains unchanged at each election.

Honor Austen, Red Seal Originator

On the occasion of the Fourth Conference of Electrical Leagues—Camp Co-operation V— a graceful tribute was tendered by the Board of Directors of The Society for Electrical Development to George W. Austen, Manager of the Electric Service League, Toronto, in the presentation of a beautifully illuminated resolution which read:

"In recognition and appreciation of his Contribution to the Electrical Industry in conceiving and initiating the idea of the Red Seal Plan to Assure Adequate Wiring. Promising to the industry abundant and measurable returns, his achievement ranks as an outstanding example of the evolution of co-operative thinking and effort—of high service ideals made practical and universally applicable—of international good-will and co-operation in industry."


Presented to
George W. Austen, Manager
Electric Service League Inc.
Toronto, Ontario
by the unanimous vote, September Seven, Nineteen twenty five, of the
Board of Directors
of
The Society for Electrical Development Inc.
in recognition and appreciation of his
Contribution to the Electrical Industry
in conceiving and initiating the idea of
The Red Seal Plan
to Assure Adequate Wiring
ELECTRIC
HOME
On the Occasion of the Fourth Conference of Electrical Leagues
Camp Co-operation V

In making the presentation, which came as a pleasant surprise during the Red Seal session, Kenneth A. McIntyre, of the staff of the Society, traced the various steps in the evolution of the Red Seal Plan, the parts played by California, the Northwest, Denver, Cleveland, Northern Illinois, Minneapolis, by Toronto itself, by the Society in gathering and making available the collective experience, and by George Austen when he added the climax by putting the Red Seal on the job.

Florida Electragists Meet at Tampa

The regular quarterly meeting of the Florida Association of Electragists was held on August 17 at Tampa. In the absence of President Preston Ayers, Charles E. James of Ft. Pierce, Secretary of the Association, presided at this meeting, which was opened with an address of welcome by Mayor Wall of Tampa. The latter spoke on the ethics of merchandising and emphasized the absurdity of cutting prices to an extent where quality merchandise and fair dealing are impossible.

Later, the meeting was then thrown open for discussion on the All-Metal Law and uniform inspection. After considerable discussion, the following resolution was recommended to the Executive Committee: That the state be divided into five sections, that each section appoint a committee to decide on a uniform law satisfactory to that section, that each section then report to the State Association Committee, which will finally draft a uniform law acceptable, as far as possible, to the entire State.

Mr. James gave a blackboard talk on the cost of store sales, during which he pointed out that most retail stores, which are operated in connection with a contracting department, are operating at a loss, and the contracting department has to assume this loss. He showed also how the overhead expense could be divided so that each department would have a share charged directly to it.

Following luncheon, W. S. Shaw discussed electrical merchandising. An early adjournment was followed by a

camera man just before the first session at Association Island, N. Y.

sight-seeing trip, after which the State Association banquet was held.

League Entertains in Washington

Members of The Electrical League of Washington (D. C.) laid aside business cares on the evening of September 17 and entertained their ladies at a dance on the roof of the National Electrical Supply Co. Building. Members of the league have long been convinced that these social evenings, together with the bi-yearly golf tournament and annual outing have done much to promote the good spirit that exists in the Washington League.

Outing at Providence

More than three hundred members of the Master Electrical Association and the Rhode Island Electrical League declared individual holidays on August 26 to attend the annual outing of the organization at the Warwick Club, Warwick, R. I. The party this year was favored both by the weather and a well planned program that called for an agreeable mixture of sports, shore dinners, and no end of miscellaneous entertainment.

Following an early luncheon, those present had a wide choice of athletic entertainment, with a baseball game between Providence and Pawtucket as a rival attraction to the track events, to say nothing of a closely fought quoits tournament. Attractive prizes were awarded to the winners in all the sport events and many souvenirs were distributed to the members at the dinner in the evening.

The Outing Committee consisted of H. A. Walker, Bert Ayers, Fred Brown, Morton Taylor, Ike Cook, A. B. Baxter, F. G. Thurston, Treasurer, and H. E. Dawson, Secretary. It is interesting to recall that the first electrical outing in Rhode Island was held at this same club in 1900 and that at this 1925 outing six of the men who comprised that first Outing Committee were present. They were W. L. Adams, H. G. Lendrim, John H. Scannevin, Andrew A. Moffitt, Fred A. Boss and Herbert Ayers.

Co-operative Christmas Window Display

Tony Sarg, the well known illustrator, has been secured by The Society for Electrical Development to produce the

annual, co-operative window display for 1925. As a result of this arrangement, the Society is offering the industry a design of unusual merit and great originality. Mr. Sarg has presented the idea of electrical gifts for the whole family.

The original drawing, which was first shown at the Conference of Electrical Leagues and Clubs at Association Island, provoked enthusiasm on the part of the conferees. The representatives of a number of electrical leagues immediately placed initial quantity orders thereby assuring the co-operative use of the display.

New Electragists

The following list of contractor-dealers have made application for membership and been accepted into the A. E. I. since the publication of the last list in the September issue:

CALIFORNIA

Beverly Hills:
Beverly Elec. Co.

Ferndale:
McLellan Elec'l Shop.
Reinhart Electric.

Glendale:
H. M. Anderson Elec'l Co.

COLORADO

Craig:
Northwest Elec. Co.

Denver:
The Elec'l Supply & Const. Co.
Schockett Electric Co.
The Williams & Rose Elec. Co.

Sterling:
Valley Electric Co.

FLORIDA

Tampa:
Knight & Wall Co.

IDAHO

Boise:
B. J. Hetherington & Co.

Caldwell:
C. D. Purkhiser.

Pocatello:
C-L Electric Co.

MICHIGAN

Detroit:
Lakin-Allen Elec. Co., Inc.

MISSISSIPPI

Clarksdale:
Beck & Beck.

NEW YORK

Buffalo:
Elec'l League of The Niagara Frontier.

Providence Master Electrical Association and the Rhode Island Electrical League at Warwick (R. I.) Club

OREGON

Pendleton:
Hales Electric Shop.
J. L. Vaughan.

Portland:
Mutual Elec. Co.

SOUTH DAKOTA

Yankton:
Shuff Elec. Service.

UTAH

Ogden:
Hartley Electric Co.
The Lighthouse.
Redfield Electric Co.
Weber Electric Co.

WASHINGTON

Chehalis:
Chehalis Elec. Co.

Everett:
Electric Light House.
Electric Sales Co.
Jones Electric Co.

Mount Vernon:
White Electric.

Seattle:
Atlas Electric Co.
C. B. Campbell Co.
F. Hackleman & Co.
F. W. Rust & Co.

Spokane:
Boyd E. Stockwell.

Tacoma:
Blue Bird Elec. Shop.
Co-Operative Elec. Co.
Mullins Brothers.
Tacoma Electric Co.

Yakima:
Elec. Power & Appli. Co.

News Notes Concerning Contractor-Dealers

At Chetek, Wis, W. P. Engmans has entered the local field with a modern shop.

The Gardner Electric Co. of Trenton, Mo., has moved to larger quarters in the Gardner Skinner Collins Building.

At Geneva, Ill., Frank Carlson, who for years has been well known locally in electrical contract work, has opened an electrical shop in West State Street.

The Martinez Electric Co. has leased part of the Irving Transfer Building in Rawlins, Wyo.

The Electric Shop, Inc., has entered the field at Sheboygan, Wisconsin. This company was incorporated for $25,000 by Leon J. Wiess and Paul Kaufman.

The Henderson Electric Co., North Adams, Mass, has moved to the Wall Building in that city.

W. E. Austin has opened an electrical shop in the Moglia Building, Morristown, N. J.

The Niemann Electric Shop has taken new and larger quarters in the Weinberg Arcade, Galesburg, Ill.

Ira McDonnell and Bill Haffenden have opened the Athens Electric Shop at 803 Broadway, Columbia, Mo.

At Holland, Michigan, The White Brothers Electrical Shop has been established on North River Avenue.

The Southers Electric Company have moved into their new building, Fourth and Canal Streets, Richmond, Virginia.

An electrical store has been opened at Union and South Streets, Peekskill, N. Y., by H. Gerschofsky of New York City.

Richard W. Clubine has opened offices as an electrical contract contractor at Seattle, Washington.

C. A. Williams & Son, Sioux Falls, S. D., have purchased the business of Lucken & Cuckenberger, electrical engineers, of Dell Rapids.

William Pierce of Hastings, N. Y., who for the past three years has continued the business of his father, Robert Pierce, for the estate, has now purchased the entire interest in the firm.

The Snohomish Electric Co. has opened a shop on Maple Street, Snohomish, Washington.

The Treadway Electric Company, Little Rock, Arkansas, has moved from its former location at 607 Main Street and will now occupy a three-story building at 206 Scott Street. The new headquarters of the company has a total floor space of 26,000 feet.

Fred Weis, who has been prominent in New Jersey politics for many years, will shortly open the Cliffside Park Electric Shop at 306 Palisade Avenue, Cliffside, N. J.

On the third anniversary of their entrance into business at Stamford, Connecticut, the owners of the Modern Electrical Supply Co. recently opened their new store at 254 Atlantic Street. The store has five show rooms at their new location.

At Mansfield, Ohio, C. C. Hout and C. S. Izenour have made plans for the Mansfield Electric Company. The former will have charge of the sales end of the new business, while the latter will see to the construction and installation work.

Miami, Florida, will have an elaborate new electrical shop about the middle of October when the Quality Electric Shop will be opened by Carney Chess and Albert Owens of Terre Haute, Ind.

Victor F. Gates and Julian A. Halks, Jr., announce that they have incorporated as Gates & Hawks, Inc., to represent the Garland Manufacturing Co. of Pittsburgh, Pa. They have established warehouse facilities at 15 Vestry Street, New York City.

L. John Bergman, Southern California representative for Pass & Seymour, Inc., is now located at 728 W. Arden Avenue, Glendale, California.

The Mitchel Electric Co., Inc., announce the opening of two new stores in Wilmington, Delaware.

At Fairmount, W. Va., the West Virginia Electrical Engineering Company have established an attractive store at 426 Main Street.

The Brockwell Electric Co., Norfolk, Va., have completely remodeled their stock and showrooms.

Lawrence Ring and R. C. Thomas, incorporators of the Suburban Electric Co., Inc., have moved into their new building at 2017 Winnebago Street, Madison, Wis.

The Sager Electrical Co. has added a Worcester, (Mass.) store to their chain of electrical establishments throughout New England.

The Home Electric Appliance Co., Wheeling, Va., has opened at the premises formerly occupied by the Steam Electric Engineering Co.

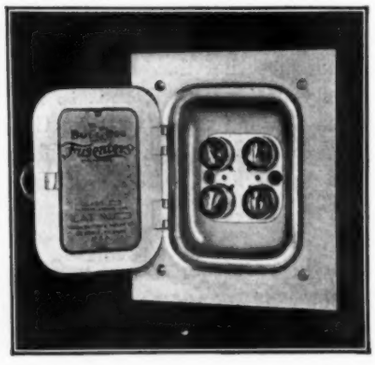
The Aladdin Manufacturing Co., of Muncie, Indiana, have announced the distribution of their new Catalog No. 25.

•MANUFACTURING•

A Department Devoted to the Latest Devices Used by the Electrical Contractor and Dealer

Eliminate Fuse Box

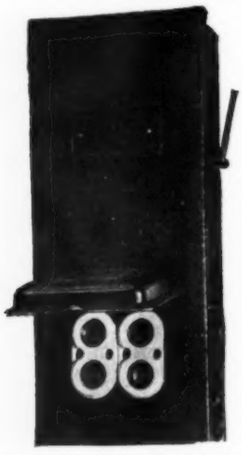
The Mutual Electric and Machine Company, Detroit, Mich., has announced a new product, The Bull Dog Safety



Fusenter. This article has been designed to eliminate the cellar fuse box and is offered in 4, 6 and 8-circuit sizes. All are ornamental in character and have a luminated finish.

Trumbull-Vanderpoel Switch

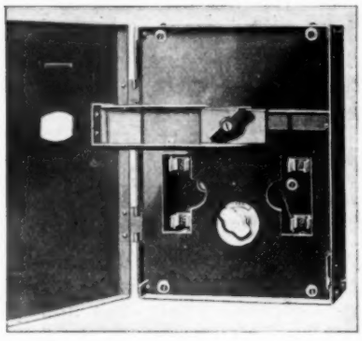
The Trumbull-Vanderpoel Electric Mfg. Co. of Bantam, Conn., announced a new four branch circuit meter service switch. It is offered to meet the de-



mand for a switch with more wiring space than that ordinarily provided in branch circuit switches. Also in this type of switch main service and meter wiring is completely isolated from the branch circuit wiring. The switch provides a convenient form of meter testing, as the switch is made with load side disconnects, which obviate the necessity for backing out branch fuses.

New Motor Starter and Reversing Switch

A new motor starter and reversing switch, the WK 21, has been recently developed by the Westinghouse Manufacturing and Electric Co. A feature of the WK-21 is its safety arrangement by which the main door is interlocked



so that it can not be opened while the motor is running. Consequently, access can be had to the reversing switch, which is under the main door, only when the switch is off and the motor is not running.

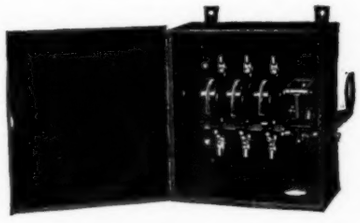
Clamp Strain Relief Cap

The clamp strain relief cap, recently brought out by Harvey Hubbell, Inc., Bridgeport, Conn., is made in both two and three wire types.

This cap is claimed to be exceptionally strong in construction and is completely steel-armored. An important advantage is the adjustable clamp feature which provides a greater range for different sizes of cord, saving time in wiring.

New Manual Contactor

The CR-1049 manual contactor recently placed on the market by the General Electric Company is a new motor-circuit switch for disconnecting both motor and control from the line under practically all conditions except a dead short circuit. It consists of contact elements mounted on insulated



shafts and connected through a snap-action mechanism to the operating handle on the outside of a sheet-steel enclosing case. Both case and handle can be locked in the open position, thus preventing unauthorized persons from closing the device.

The new contactor is being made in four sizes, as follows:

CR-1049-B2	50 amperes	2, 3 and 4 poles
CR-1049-B2	80 amperes	2, 3 and 4 poles
CR-1049-C1	150 amperes	2, 3 and 4 poles
CR-1049-D1	300 amperes	2 and 3 poles

Cutler-Hammer Plug

A new attachment plug devised by the engineers of the Cutler Hammer Co., Milwaukee has recently been placed on the market. The plug incorporates several features of design and construction. Heavy wall construction is said to make the cap virtually unbreakable at the point where it most frequently receives the shock of an accidental fall or blow. Staked binding screws facilitate wiring and prevent loss in assembly, while a rivet and anchor construction holds the terminal prongs permanently fast and keeps them from turning. Both cap and base are of moulded ebony Thermoplax.

X-Ray TRADE MARK REG. Reflectors

$6.00
No. 500 King
For 200-Watt Mazda Lamps

$6.00
No. 510 Queen
For 200-Watt Mazda Lamps

$4.50
No. 500 Jack
For 150-Watt Mazda Lamps

$4.50
No. 410 Jill
For 150-Watt Mazda Lamps

After the Sun goes down

After darkness falls—many stores in your district are increasing their sales by using X-RAY REFLECTORS!

For twenty-nine years genuine green-backed X-RAY REFLECTORS have been standard for show windows. Long, satisfactory service and the highest efficiency have made X-RAY REFLECTORS easy to sell. The new types, shown at the right, are of the finest quality—and yet are offered at popular prices! Never before has the X-RAY line proved so profitable or easy to sell!

Write for Information about the New Reflectors!

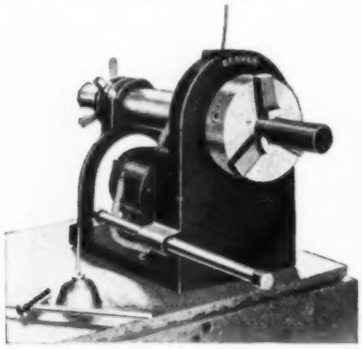
CURTIS LIGHTING, Inc.
1106 W. Jackson Boulevard
CHICAGO
31 W. Forty-Sixth St. New York
3113 W. Sixth St. Los Angeles

Holders Free!

CURTIS LIGHTING, Inc.,
1106 West Jackson Boulevard, Chicago.
Send me price, descriptions and specifications sheets on the four NEW X-Ray Reflectors with holders—FREE.

Cutting and Threading Portable Machine

The Borden Co., of Warren, Ohio, has announced the No. 44 Beaver Power Drive, a portable electric machine developed for cutting and threading ¼ to 2 in. pipe. This machine, which weighs 230 lbs. and is equipped with a motor operated from an ordinary light socket,



includes a Universal sliding extension shaft which cuts and threads up to 6 in. pipe using geared die sockets or cutters.

Automatic Percolator

A new design of percolator, embodying the same heat control as that of the automatic iron has recently been announced by the Westinghouse Electric and Manufacturing Company. The Spencer bi-metal disc type thermostat

is used as the controlling medium in this new appliance.

This thermostat controlling the heat is a small convexed bi-metal disc, the dual metals having unequal ratios of expansion. When heated, a curling tends to take place in the disc until sufficient internal stress is developed to cause it to snap to a reverse or concave position, thus breaking the circuit and turning off the current. Upon cooling, it snaps back into its former position, current contact is again made, and heating begins again. If the current is turned on in the empty percolator or if it is allowed to boil dry this automatic thermostat turns the current off before any damage can be done.

Williams Makes Change

Roger Williams, one of the pioneers in the commercial development of the electric heating appliance business, has resigned from the Simplex Electric Heating Company, for which he has acted as New York representative for the past twenty-five years.

Mr. Williams, who was born December 6, 1878, started as office boy with the Simplex organization in 1896 and four years later was made New York agent. He continued in that capacity until 1922, when the company altered its distribution policy and he became New York manager.

He was one of the first to engage in electrical retailing entirely of appliances, having conducted a retail store in conjunction with the agency for nine years. Many of the retail ideas which have been successfully used in other parts of the country were first tried out in his store.

Mr. Williams has announced that he is going back into business for himself as a manufacturers' agent, handling electrical specialties. His address is 132 West 31st Street, New York.

The United States Rubber Company has announced the appointment of J. A. Wahlgren as manager of wire sales. In his new capacity, Mr. Wahlgren succeeds W. E. Barker, who becomes a special representative of the company's mechanical sales staff.

Electric Refrigerator

An electric refrigerator, in which the mechanism is totally enclosed, which is practically silent in operation, and requires no attention for lubrication has been announced by the General Electric Company. The motor, compressor, and all moving parts are hermetically sealed in a case containing the refrigerant and lubricating oil. Motor and compressor are mounted vertically on the same shaft, and cylinder pressures are equalized by a valve device, allowing the motor to start under no load. The unit is designed for use with any one of several sizes of boxes, of one of two finishes and lined with white vitreous porcelain fused on steel. Corkboard insulation is used.

New RCA Sales Plan

A new merchandising plan has been announced by E. E. Bucher, General Sales Manager of the Radio Corporation of America to take effect immediately. This campaign is aimed to make short work of the fly-by-night radio dealer and is designed to protect the public against misrepresentations in general.

This "Selective Dealer Plan" calls for the distribution of signs which indicate clearly who is an RCA Registered Dealer. The plan requires that, to be eligible for selection as an RCA Registered Dealer, a firm must have established and maintain a satisfactory volume of business and serve that business well, in addition to meeting certain credit requirements of the plan.

General Electric Changes

Gerard Swope, President of the General Electric Company, announced the appointment of T. W. Frech of Cleveland, Ohio, and W. R. Burrows of Harrison, N. J., as Associate Managers of the incandescent lamp business of the company, effective September first. On the same date, G. C. Osborne became sales manager of the Edison Lamp Division, a position formerly held by A. D. Page. Mr. Page will continue as a member of the advisory lamp committee.

General Electric Bulletin No. GEA 188 has just been published at the offices of the company, Schenectady, N. Y. This issue features Bell Mouths and Gaskets.

PITTSBURGH
THREAD PROTECTED
ENAMELED CONDUIT
STANDARD
PATENTED

For

ALL-METAL

Wiring

Then there's Speed, too

SECURITY first—that's All-Metal Wiring. Then there's installation speed, too, when you use this efficiency conduit.

Pittsburgh Standard Enameled Conduit, with its patented Thread Protectors, reaches the job ready to install. Threads clean, sharp and true—coated with just sufficient enamel to protect from rust. Pipe ends butt solidly together inside of couplings, and assure a tight-fitting substantial conduit system.

Costs no more than ordinary enameled conduit. Pittsburgh Standard gives you speed in installing—a saving that mounts into a neat profit. Why not get this saving on your next job?

PITTSBURGH STANDARD
Galvanized Conduit

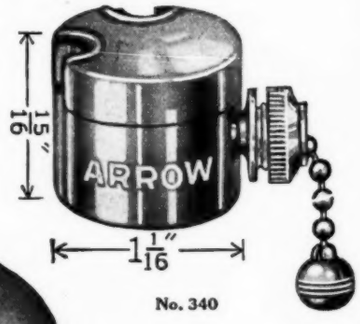
STANDARD in fact as well as in name, this high grade galvanized conduit is the first choice of many experienced Electragists.

Enameled Metals Company
PITTSBURGH, PA.

The Smallest Pull Switch Made For Canopies

A New ARROW Product

Actual Size about 1 inch both ways



No. 340

SHALLOW AND NARROW

No. 341

Cat. No.	List Price	Std. Pkg.	Schedule H Rating 3A.—125 V. 1A.—250 V.	Pkg. Wgt.	Carton
340	$0.75	100	Canopy Pull Switch with 8 inch chain	19	25
341	.75	100	Canopy Pull Switch with short chain and 6 feet of cord	19	25

Brush Brass is the standard finish on exposed parts. Silvered finish will be furnished at the same price.

THE ARROW ELECTRIC COMPANY
HARTFORD, CONNECTICUT

ELECTRICAL ARROW WIRING DEVICES

ARROW

The complete line of Wiring Devices

Consumer acceptance

"WE HAVE sold your products for some time," says W. J. Wohler, Wohler Hardware Company, Minneapolis, Minn., "and consequently can say that there is no sales resistance in selling goods manufactured by the National Carbon Co., Inc."

Eveready Columbia Dry Batteries are known everywhere; national advertising keeps them forever before the public; their own matchless performance makes them preferred by all who have had any experience at all with dry batteries. These things make them immediate sellers, without question from the buyer or explanation from you. How is your stock of Eveready Columbias?

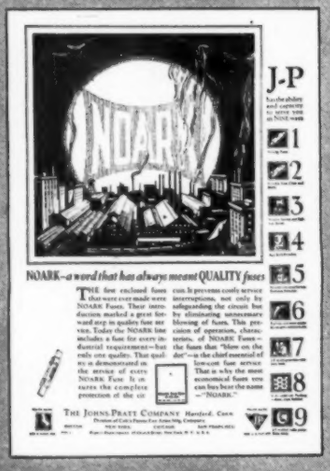
Manufactured and guaranteed by

NATIONAL CARBON COMPANY, INC.
New York San Francisco
Atlanta Chicago Dallas Kansas City Pittsburgh
Canadian National Carbon Co., Limited, Toronto, Ontario

EVEREADY
COLUMBIA
Dry Batteries
–they last longer

We are spreading the message of NOARK *more this year than ever before — which means more business for* NOARK *dealers*

NOARK



The Johns-Pratt Company

HARTFORD, CONNECTICUT, U. S. A.

Division of Colt's Patent Fire Arms Mfg. Company

BOSTON NEW YORK CHICAGO SAN FRANCISCO

Export Department, 30 Church Street, New York, N. Y., U. S. A.

TRADE MARK REG. U.S. PAT. OFF.

TRADE MARK JP REG. U. S. PAT. OFF.

J-P has the ability and capacity to serve you in NINE ways

1 NOARK Fuses

2 NOARK Fuse Clips and Blocks

3 NOARK Service Boxes

4 NOARK Underground Boxes

5 NOARK Universal Service Entrance Switches

6 Railway and mine material, hangers, insulators, etc.

7 J-P molding service—contract basis

8 VULCABESTON Packing—sheet, rope, braided

9 J-P molded radio parts from stock

2521-I

TYPE N-3

"TH' boss says that when one o' th' boys does th' small jobs in bang-up shape it's a sign that he'll come through with flyin' colors on th' bigger jobs too.

"That's the way I figger on switches. Everybody knows that th' Condit N-4's there a mile fer small motors. 'N so, natcherly, when I picks th' Condit N-3, fer th' bigger jobs I ain't makin' no mistake."

*—SAFETY SAM.**

The Condit N-3 Oil Motor Starter is for use with motors above the rating of the N-4. It has the same high quality of workmanship and performance. Manually operated or with push button control, with or without undervoltage protection.

Let us send full information.

**"Safety Sam's my name an' "Safety First's" my motto. That's why I says "Get in Touch with Condit." Look me up nex' month."*

—S. S.

"*Get in touch with Condit*"

CONDIT ELECTRICAL MFG. CO.

Manufacturers of Electrical Protective Devices

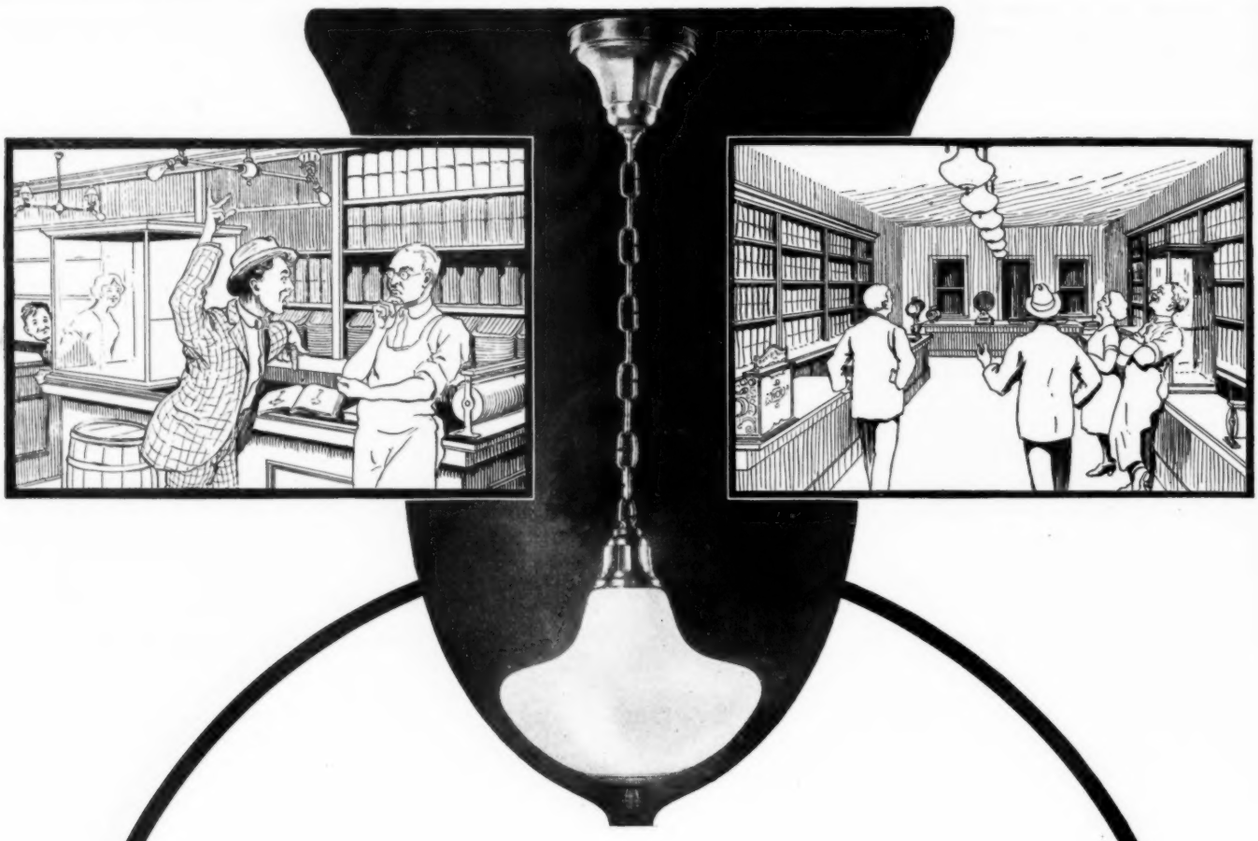
South Boston, Mass.

Northern Electric Company LIMITED

Sole Distributor for the Dominion of Canada.

8542

CONDIT



Show the Doubters

MANY prospective users of Sol-Lux fixtures are doubters but Sol-Lux fixtures will really benefit them, and they can be shown.

To aid Westinghouse Lighting Retailers to make such demonstrations, our Fall Lighting Campaign is featuring a ***9-day Comparison Test.***

Campaign Gives 9-day Comparison

The dealer offers his prospect a 9-day comparison test. The new fixtures are installed without cost. At the end of nine days the prospect either accepts and pays for the improved lighting or else has the fixtures removed. Experience has shown that he will very seldom go back to his poor lighting.

The campaign is especially attractive for Westinghouse Lighting Retailers. Their personal sales efforts are backed by direct-by-mail advertising, local newspaper advertising and national trade paper advertising.

Get in touch with our nearest Merchandising Manager TODAY.

Westinghouse Electric & Manufacturing Company
George Cutter Works South Bend, Indiana
Sales Offices in All Principal Cities of
the United States and Foreign Countries

W
WESTINGHOUSE ELECTRIC

We specialize in
STORE LIGHTING

We are an authorized
Westinghouse
LIGHTING RETAILER

Get This Card for Your Window

Westinghouse

X 85535

Get Behind a Standard Line of Safety Switches

THE demand for Westinghouse WK Safety Switches is increasing daily. Architects, plant engineers and executives, and other purchasers of safety switches have become familiar with WK quality and are specifying WK switches for every variety of switch application.

Safety of operation, simplicity of design, and assurance of continuous service are the reason for this preference.

Every WK Safety Switch sold is a salesman for a repeat order.

The booklet, The ABC of Safety Switches, is a condensed education on safety switch design and application. It will help you solve your customers' switch problems. Mail the coupon.

Westinghouse Electric & Manufacturing Company
Merchandising Department
Mansfield Works Mansfield, Ohio
Sales Offices in All Principal Cities of
the United States and Foreign Countries

Westinghouse Electric & Manufacturing Company
Merchandising Department Mansfield, Ohio
Please send me a copy of "The ABC of Safety Switches."
Name.....
Company.....
Address.....

X80650

Santa Knows What They Want

W
WESTINGHOUSE ELECTRIC

HELP your community with its Christmas shopping. Create a desire for gifts electrical. Use the Westinghouse Gift Guide. See what it is and how it can make this Christmas business the largest you have ever known.

A postal card to your nearest district office will bring you full information.

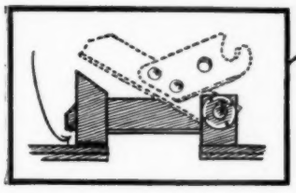
Westinghouse Electric & Manufacturing Company
Merchandising Division
Mansfield Works Mansfield, Ohio
Sales Offices in all Principal Cities of the
United States and Foreign Countries

Westinghouse

X85553

All operating mechanism located in switch handle. No trouble-making parts inside of switch to cause shorts, burn-outs, or other damages—an exclusive Westinghouse characteristic.

The arcing takes place at the point of the jaw and the blade tip. When opening the circuit under heavy load, the part that burns is outside the jaw—an exclusive Westinghouse feature.



The Switch that Creates Confidence

Every Westinghouse WK-60 Safety Switch sold becomes a salesman for your entire line.

The good construction of the WK-60 and its important, exclusive features assure a service record that builds confidence in your merchandise.

The WK-60 is designed for the maximum in long, continuous service. The entire operating mechanism, except the crank arm, is located outside the box in the switch handle where it can cause no harm and where it is easily accessible.

The diamond-pointed jaw assures a perfect contact at all times and reduces replacement costs considerably.

It is truly a Long Life Switch

The ABC of safety switches contains much useful information to help you solve your customers' safety switch problems. Mail today the attached coupon for your copy.

Westinghouse Electric & Manufacturing Company
Merchandising Department
Mansfield Works Mansfield, Ohio
Sales Offices in All Principal Cities of
the United States and Foreign Countries

Westinghou

X81706

Westinghouse Electric & Manufacturing Company
Merchandising Department Mansfield, Ohio
Please send me a copy of folder giving detailed information about the WK-21 Motor Starter.

Name.....

Company.....

Address.....

C

To Break Down Sales Barriers

tie up with these National Sales-Increasing Activities

Elliptical Angle Reflector

One of the finest reflectors made by *Benjamin*. Especially suitable where physical conditions make lighting from the side desirable. Crysteel Porcelain Enamel in Benjamin green outside; white inside. Widely used in shops, mills, foundries, over bowling alleys, show windows, etc. Used outdoors everywhere in illuminating poster advertising, wall and roof signs, billboards, building exteriors, protective fence lighting, race courses, athletic fields, industrial yards, etc.

The tremendous amount of good that will be accomplished by the National Industrial Lighting Activity—which is being undertaken by the Industrial Lighting Committee of the N. E. L. A. during this Fall and Winter—will open new markets and new opportunities everywhere for central stations, electrical jobbers, contractors, and dealers. The many thousands of dollars the N. E. L. A. and its co-operators will spend in national and local advertising will be of benefit to everyone connected with the electrical profession. The biggest profits and the strongest prestige will go to those who offer their trade

Benjamin Industrial Lighting Equipment

Accepted the world over as the most modern and practical lighting equipment. Benjamin is increasing good will by improving lighting conditions in thousands of shops, factories, mills, offices, and outdoors everywhere. It is the Standard Lighting Equipment of Industry.

In every part of the country our selling organization and all district representatives will gladly co-operate to the fullest extent with local activities and individuals in giving talks, setting up exhibits and making demonstrations. Our advertising department will furnish bulletins, catalogs and other selling helps and tie-in wherever possible with your own direct advertising activities. Write our nearest office or ask any Benjamin representative.

Benjamin Electric Mfg. Co.

247 W. 17th St. New York — 120-128 S. Sangamon St. Chicago — 448 Bryant St. San Francisco

Manufactured in Canada by the Benjamin Electric Mfg. Co. of Canada, Ltd., Toronto, Ontario

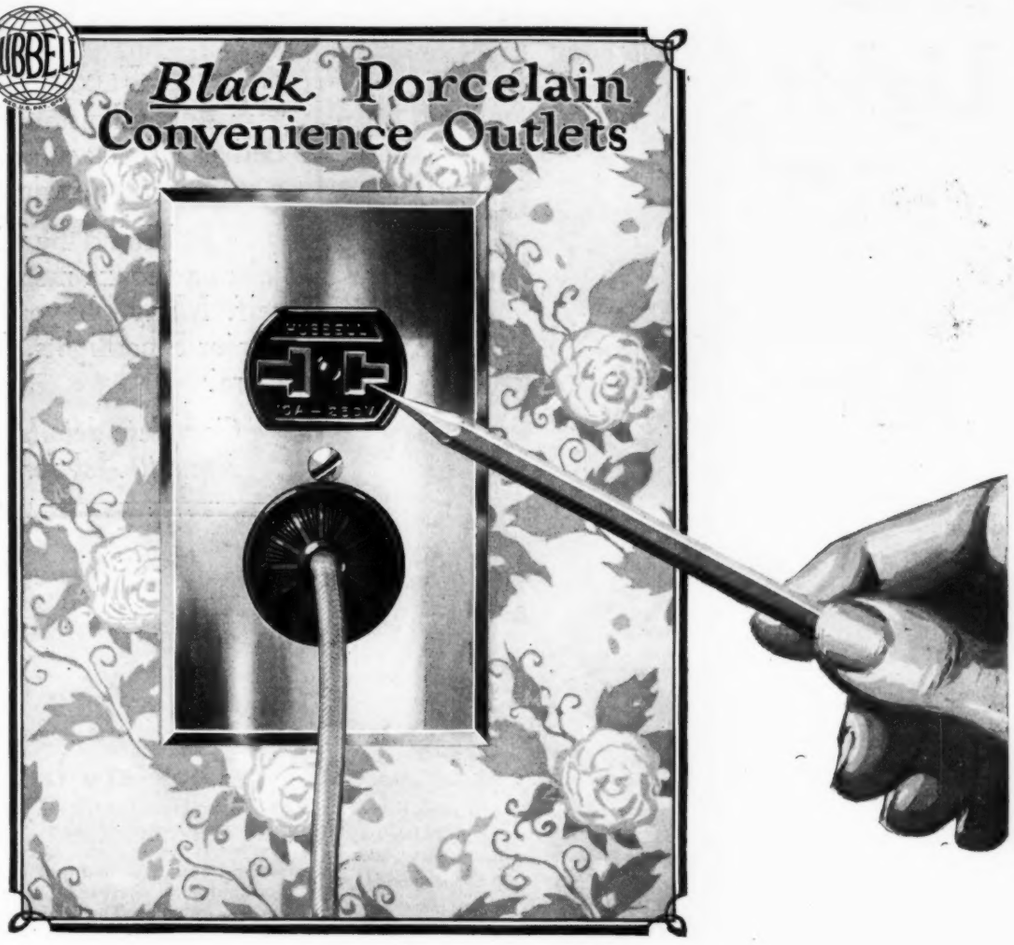
Super Equipment *for* Correct Industrial Lighting

BENJAMIN

for Permanence

HUBBELL

Black Porcelain Convenience Outlets



They do not crumble at the sharp edges around the Te-Slots

This is one of the important advantages of Hubbell Convenience Outlets made of *black* porcelain.

Black porcelain, because of its exceptional strength and other qualities, is the unexcelled material for convenience outlets.

First, it does not crumble at the sharp edges around the Te-Slots. Secondly, it does not chip easily nor scratch. Thirdly, it does not absorb moisture. Fourthly, it does not deteriorate.

Hubbell *Black* Porcelain Convenience Outlets mean *permanence*—lasting jobs and satisfied customers. Write for a sample—see how well-made and durable these outlets are.

Made in both side-wired and top-wired types—single and duplex.

HARVEY HUBBELL INC
ELECTRICAL WIRING DEVICES
BRIDGEPORT CONN. U.S.A.
NEW YORK, N.Y. CHICAGO, ILL.

Remember it's the Te Slots, that make outlets "Convenient"

2580-U.

MAJOR

Flood Lights

Install Them for PROFIT!

MAJOR FLOODLIGHTS are easy to sell and install, yet they look big, deliver a spectacular service and carry a substantial margin of profit for you.

Get behind the wider margin profit jobs and make more money for yourself. Many jobs you now have can use Major Floodlights. Why not suggest them?

Complete details sent free upon request. Ask for Bulletin No. 6

They are better because:

The Major Floodlight hood is of spun aluminum, waterproof, weatherproof and fine appearing. The Major Reflector is Bausch and Lomb make, heat-resisting spun glass, ground, polished and heavily silvered. The Major Floodlight is all enclosed, but can be conveniently focused from the outside. The Major glass front screws on. The Major mountings are standard pipe threadings and can be had to fasten to all types and kinds of surfaces. For floodlighting efficiency Major Floodlights cannot be excelled—they give most light per watt and put an even field of light over any desired surface.

District Offices:

St. Louis, Mo.
Frank Adam Electric Co.
3649 Bell Avenue

Detroit, Mich.
H. H. Norton
627 Wayne Street

Cincinnati, Ohio
E. P. Schurig
213 E. Third Street

New Orleans, La.
W. J. Keller
509 Conti Street

Minneapolis, Minn.
L. H. Cooper
442 Builders' Exchange

San Francisco, Calif.
H. B. Squires Co.
583 Howard Street

Seattle, Wash.
H. B. Squires Co.
552 First Avenue C.

Cleveland, Ohio
D. C. Griffiths
Rockefeller Building

Dallas, Texas
E. V. Griefield
Carroll & Sycamore Sts.

Kansas City, Mo.
Robert Baker
828 New York Life Bldg.

Denver, Colo.
Alex Hibbard, Inc.
1940 Blake Building

Indianapolis, Ind.
The Scott-Jaqua Co., Inc.
707 Roosevelt Bldg.

Los Angeles, Calif.
H. B. Squires Co.
229 Boyd Street

Philadelphia, Pa.
Wm. A. MacAvoy, Jr.
12 N. 5th Street

Pittsburgh, Pa.
Coffin-Perry Co.
501 Ferguson Building

Salt Lake City, Utah
Raymond Ackerman
212 So. W. Temple St.

MAJOR
Major Equipment Company
360 N. Michigan Ave., CHICAGO

MAJOR FLOODLIGHTS are Selective Sunlight

Panel Board Service

Detroit, Michigan.
H. H. Norton,
627 Wayne St.

Cincinnati, Ohio.
E. F. Schurig,
213 E. Third St.

New Orleans, La.
W. J. Keller,
509 Conti St.

Minneapolis, Minn.
L. H. Cooper,
442 Builders' Exchange.

Atlanta, Ga.
L. A. Crow,
No. 4 Cone St.

Boston, Mass.
J. J. Cassidy,
222 Devonshire St.

Baltimore, Md.
Wolfe-Mann Mfg. Co.
320 S. Hanover St.

Cleveland, Ohio.
D. C. Griffiths,
Rockefeller Bldg.

Chicago, Illinois.
Major Equipment Co.,
360 No. Michigan Ave.

Dallas, Texas.
R. S. Wakefield,
324 Interurban Blvd.

Kansas City, Mo.
Robert Baker,
828 New York Life Bldg.,

Denver, Colo.
Alex Hibbard, Inc.,
1940 Blake Bldg.

Indianapolis, Ind.
The Scott Jaqua Co., Inc.
707 Roosevelt Bldg.

Los Angeles, Calif.
H. B. Squires Co.
229 Boyd St.

San Francisco, Calif.
H. B. Squires Co.,
583 Howard St.

Seattle, Wash.
H. B. Squires Co.
552 First Avenue C.

Portland, Ore.
H. B. Squires Co.
53 Fourth St.

Philadelphia, Pa.
Wm. A. MacAvoy, Jr.,
12 N. Fifth St

Pittsburgh, Pa.
Coffin-Perry Co.,
501 Ferguson Bldg.

New York City, N. Y.
R. MacIntyre,
197 7th Ave.

Winnipeg, Canada.
Langley Electric Mfg. Co.
677 Notre Dame St.

London, Ontario, Canada.
Taylor Electric Mfg. Co.
526 Adelaide St.

Call on the nearest office for estimates

Panelboard Reputation

What it means to you

There is seldom a lasting reputation without real worth behind it. FA Panelboards have gained the reputation of being "The Sign of a Better Job" by years of consistent performance. They are easier to buy because of standardization of panelboard and cabinet; easier to install because of roomy wiring space and broad terminals; and they last longer because every part is built heavier and more substantial so that it does not have to be "accessible for replacement." An FA Panelboard usually lasts as long as the building.

There is an FA Panelboard for every job. One and two fuse types; with and without controlled branches; plug and cartridge fuse branches.

The FA Panelboard Catalog is a manual of correct panelboard practice and should be in every contractor's office. Send for your copy now.

Frank Adam
ELECTRIC COMPANY
ST. LOUIS

Life Size FA Tumbler Switch

Look at the simple, sturdy construction of this FA Panelboard Tumbler Switch shown here **actual size.** Compare this switch and other FA details with switches on other makes of panelboards and learn why FA Panelboards are accepted everywhere as the "sign of a Better Job." They cost you less than the inferior kind, everything considered.

Mr. Christensen Treats-U-Rite

Mr. H. Christensen of the Treat-U-Rite Electric Company, Kansas City, Mo., won the fourth prize in the porcelain contest:

1.—I find them the most economical and cheapest insulating material on the market.

2.—Porcelain Knobs, Tubes and Cleats are time savers in any electrical installation.

3.—They are 100 per cent. more substantial from a breaking standpoint than glass or other substitutes.

4.—Considering the size of Porcelain Knobs, Tubes and Cleats used by the general constructors, who use them chiefly for No. 14 circuits, I find them 100 per cent. non-conducting.

5.—Porcelain Knobs, Tubes and Cleats, as manufactured by the Electrical Porcelain Manufacturers' Association, which I have been using for several years, comply strictly with the Underwriter's Code.

6.—In using Porcelain Knobs, they give me the desired height from the surface wired over (without thought or worry) as specified by the Underwriters.

7.—In a knob and tube installation, with wires run in a neat and workmanlike manner, Porcelain Knobs and Tubes produce an electrical system any contractor can be proud of.

8.—I use Porcelain Knobs, Tubes and Cleats because they are 100 per cent. non-combustible and non-absorptive.

9.—Porcelain Tubes are the best and safest protection of conductors against accidental contact with pipes, metallic conducting material, or other conductors.

10.—I use Porcelain cleats where space is limited, as regards height from surface wired over and distance allowed between wires, without encroaching on the rules of the Underwriters.

The Electrical Porcelain Mfrs. Assn.

304 Tacoma Building **CHICAGO, ILL.**

Edward G. Budd Mfg. Plant, Philadelphia, Pa., Uses Americore Wire

It is under conditions where the responsibility for successful service is heavy that Americore and other American Steel & Wire Company products firmly establish their dependability and economy.

Americore is a high-grade compound, meeting all code requirements, and can be recommended for all service conditions in which the working pressure is 7000 volts or under.

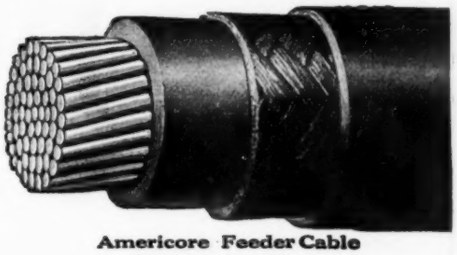
Send for catalogue and handbook of Electrical Wires and Cables. Estimates promptly furnished upon request

Below are some of the Americore wires used in the large new unit of the Edward G. Budd, manufacturing plant, in Philadelphia.

Solid Tinned Copper Conductor

Stranded Tinned Copper Conductor

Solid or Stranded Tinned Copper Conductor



Americore Feeder Cable

American Steel & Wire Company

Americore

Rubber-covered wire

Chicago New York Boston Birmingham Dallas Denver Salt Lake City

U. S. Steel Products Co.: San Francisco, Los Angeles, Portland, Seattle

DURAWIRE
Makes Good
On Any Job!

ON EXPOSED WORK

The smooth waxed surface looks neat and trim.

ON CONCEALED WORK

Its rugged insulation keeps the current on the wire.

These things make DURAWIRE a good wire to install. The surface shows your customer that you are giving him a good job. The inside protects you against short-circuits and all the troubles that go with them.

Why not use these advantages—you get them in every foot of

DURAWIRE

Reg. U. S. Pat. Off.

Ask your Jobber for it.

TUBULAR WOVEN FABRIC COMPANY
Pawtucket, R. I.

Make it a durable job. Use all the DURABILT Products.

UNION

New and Improved RENEWABLE FUSES

Instant Acceptance!

NEVER has there been such general acceptance and recognition of a device as was accorded the new and improved Union Renewable Fuse.

In less than a week after the initial announcements appeared, the number of orders showed conclusively that the extreme simplicity, substantial construction, and the other distinct advantages were appreciated by fuse users as well as the electrical trade. They were quick to see the possibilities of Union Fuses in affording maximum protection at minimum cost.

Stocks Being Rushed to Jobbers

Shipments are being rushed daily to all parts of the country. Production has been increased twice since the first schedules were planned.

If you have not had an opportunity to see one of these fuses, ask your supply house to send you some before you place your fall orders. The fuse will tell its own story—take one apart—you'll recognize its advantages in a minute.

Pamphlet 101 also has the complete information and prices on all Union Renewable Fuses. Copy on request.

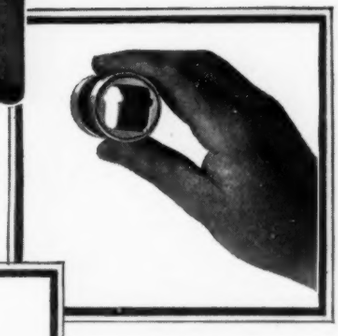
CHICAGO FUSE MFG. CO.

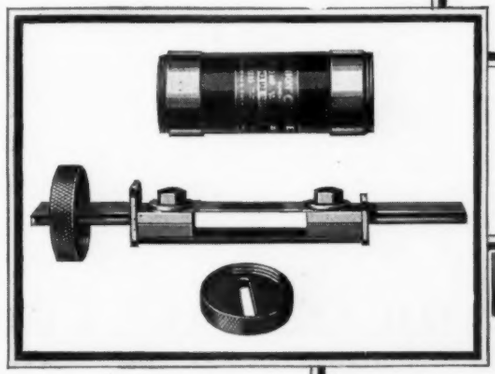
MANUFACTURERS OF

ELECTRICAL PROTECTING MATERIALS AND CONDUIT FITTINGS

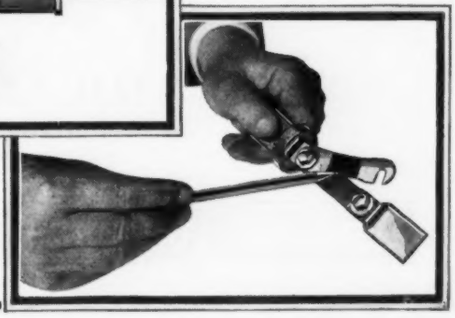
1503 W. 15th Street
CHICAGO, ILL.

Both openings in the case are full-sized, making easy inspection and cleaning.





Simplicity—take off one end cap, unscrew the other and pull out the complete knife-blade member. Note the straight-line construction and the heavy fibre bar that rigidly holds the knife blades in permanent alignment.



The link is notched to facilitate renewal, and is held down by studs so that there are no exposed threads to be clogged by molten metal.

Who uses the EMF ELECTRICAL YEAR BOOK

ELECTRICAL SUPPLIES

and *how* they use it

James R. Strong, President,
Tucker Electric Co., New York.

The EMF Electrical Year Book Contains

Over 3,100 practical definitions of electrical products.

Over 51,000 listings of manufacturers under the products they make.

Over 7,700 company entries.

Over 6,800 electrical trade names.

A Geographic Section for locating nearest source of supply of any electrical product.

Condensed catalog exhibits of prominent manufacturers.

All alphabetically arranged—as easy to use as a telephone directory.

"We find constant need to refer to the EMF ELECTRICAL YEAR BOOK," says James R. Strong, one of the most prominent electragists in the country.

The EMF is the one outstanding source of authentic information on electrical trade names, definitions of electrical terms and products, lists of manufacturers and everything electrical.

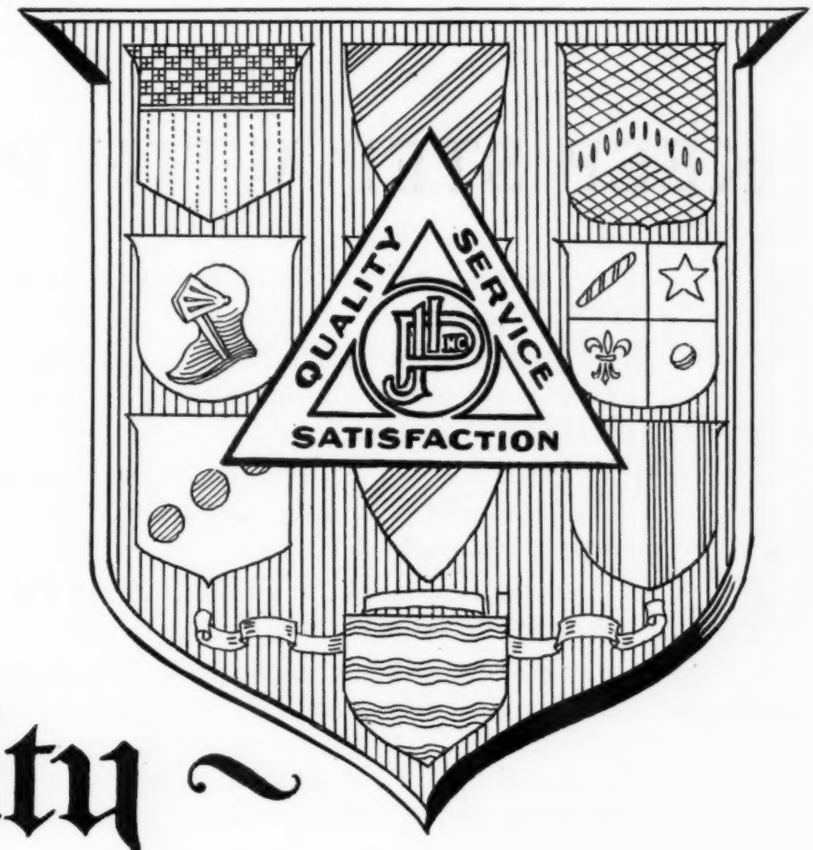
It is in daily use by thousands of electrical contractors and dealers who refer to it whenever they are in the market for anything electrical.

The EMF is an important factor in helping these electragists select the exact products needed for any job, or the merchandise or repairs needed to properly meet the demands of their customers. And the important feature of the service performed by the EMF is the saving in time effected. Anything you want to know at your very finger tips. It will pay you too, to get the "EMF habit."

If you have a copy of the EMF use it;
if not, get in touch with us.

ELECTRICAL TRADE PUBLISHING CO.
Also Publishers of The Jobber's Salesman
53 WEST JACKSON BLVD. CHICAGO.

Whatever you want *to* know-if it's electrical-look *in the* EMF



Quality

QUALITY springs from something deeper than just good materials, good workmanship and other physical assets; it has its BEGINNING in a definite desire on the part of an organization—and the men who comprise it—to build the best products possible.

We are proud to point to the Paulding Trade-mark as our "coat of arms" because it symbolizes our standards: Quality, Service and Satisfaction. We have both the desire and the facilities for puttingt all three into Paulding Wiring Devices.

Contractors who believe in Quality Work—and the number grows greater each day—and who make Paulding a part of the job can be sure of the Superior Quality of the wiring devices used in the installation.

Paulding Quality means "Wiring Devices of Merit" plus Service of a definite and helpful character plus Satisfaction that stands back of every sale.

JOHN I. PAULDING, INC.
New Bedford, Mass.

Paulding

WIRING DEVICES OF MERIT

KEEP STEP WITH PROGRESS!

The past ten years have seen wonderful strides in the electrical industry.

Electric Light has increased by many hours each day the time available for production, recreation, study and enjoyment on the part of the American people.

Electric Power has lightened the tasks of the housewife, added to the efficiency of industry and reduced the cost of many things indispensable to modern life.

Radio has brought to a million homes the finest sort of entertainment and information.

This progress has emphasized the necessity for efficient and safe wiring, which is ALL-METAL WIRING. It has brought millions into contact with current-carrying wires and increased the danger of fire and accident, which, in most cases, result from tampering with electric circuits by amateurs.

Keep step with progress. Urge the use of ALL-METAL WIRING, and use for your installations

Buckeye Conduit

OR

Realflex Armored Cable

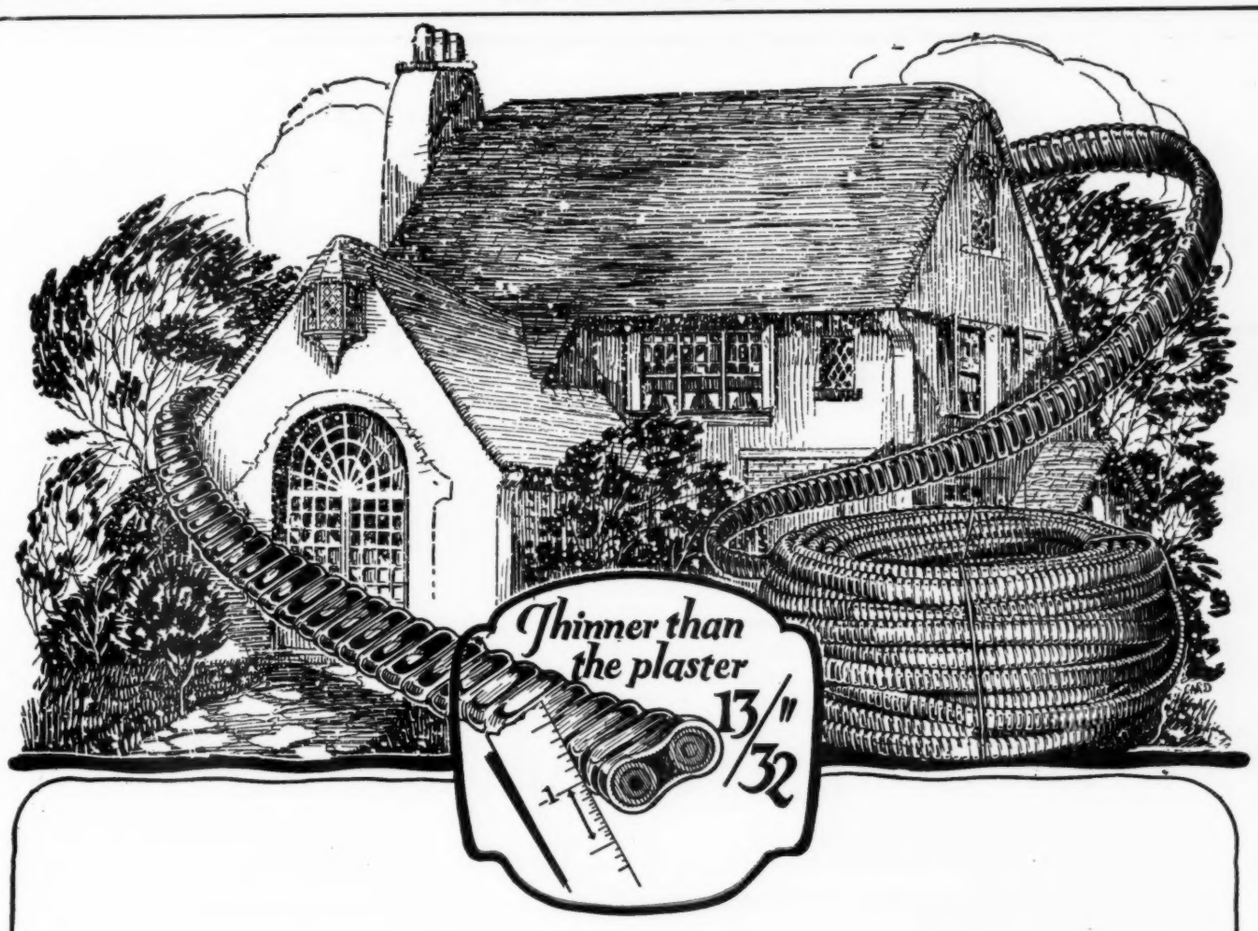
These materials have no superior. Both are of the very highest grade. Both will add to your reputation and serve as practical insurance against troubles and inspection quibbles.

THE YOUNGSTOWN SHEET & TUBE COMPANY

YOUNGSTOWN, OHIO

DISTRICT SALES OFFICES:

Boston—Massachusetts Trust Bldg.
New York—30 Church Street, Hudson Terminal Bldg.
Philadelphia—Franklin Trust Bldg.
Atlanta—Healey Bldg.
Pittsburgh—Oliver Bldg.
Cleveland—Union Trust Bldg.
Detroit—First Nat'l Bank Bldg.
Cincinnati—Union Trust Bldg.
Chicago—Conway Bldg.
St. Louis—Mo. State Life Bldg.
Denver—First Nat'l Bank Bldg.
Dallas—Magnolia Bldg.
San Francisco—Sharon Bldg.
Seattle—Central Bldg.
Kansas City, Mo.—Commerce Bldg.
Minneapolis—Andrus Bldg.
New Orleans—Audubon Bldg.



OVALFLEX is a flat armored cable developed by the National Metal Molding Company to make wiring easier. It is 13/32 of an inch thick and therefore can be laid on the surface of brick, concrete or tile walls—without cutting or grooving—and be completely covered with the usual thickness of plaster.

For surface wiring, because of its extreme flexibility and flat shape, Ovalflex is particularly desirable. It is easily bent edgewise or flatwise. It fits snugly into corners and can be carried through the sides of shallow attractive boxes and into places where a round armored cable would be considered unsightly.

For re-wiring, a narrow groove in the plaster is all that is needed. After the OVALFLEX is laid it can be completely covered with an ordinary coating of plaster.

Safe everywhere, easy to handle, OVALFLEX saves time, saves money and saves labor.

Ovalflex

A Flat Armored Cable

National Metal Molding Co.

1543 **Fulton Building, Pittsburgh, Pa.** (x39)

"GALVADUCT" *and* "LORICATED"

Rigid Steel Conduits

For work that wins approval

"Approval" doesn't mean simply the sanction of some official body. It means MORE—the personal approval of the owner and occupants of the building of a job that is planned and executed the right way—the way that means most in satisfaction, safety and service for them.

Wiring work that wins this kind of approval is the natural result when the **right method** of work is combined with the use of products that enable this method to be employed at its best.

"All-Metal" is the right method—a fact founded on its use in the finest buildings in the country and its adoption by leading electragists everywhere.

"Galvaduct" and **"Loricated"** Rigid Steel Conduits are the right products—conduits whose use means "All-Metal" at its best. Their "service record" for over a score of years is ample proof of their permanent quality.

All-Metal Wiring with "Galvaduct" and "Loricated": A sure and simple formula for work that wins the approval of the owner—approval of the work itself and of the man who planned and put in the installation.

Manufactured Solely by

Garland Manufacturing Co.

PITTSBURGH, PA.

The most extensive line of floor boxes available

No. 2651
(Shallow Type)
Adjustable Floor Box

No. 2512
Adjustable Two Gang
Floor Box

THE R & S line of floor boxes and receptacles covers every phase of electragists' needs. This line is supplied in a wide range of types and sizes, either adjustable or non-adjustable, at prices which make them suitable for all kinds of installations.

These products are so designed and made that, once installed, they will require no further attention. Boxes are of galvanized cast iron, floor plates of heavy brass, with gaskets to make them watertight.

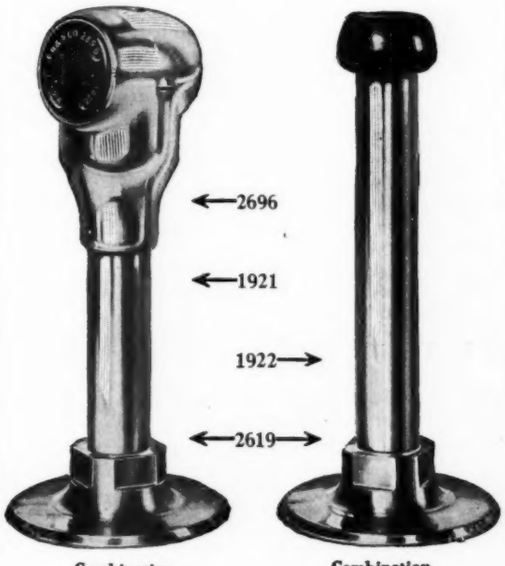
Bulletin 52 describes the various types of R & S floor outlets. Write for it today.

We will also send on request Bulletin 53 describing the many types and capacities of R & S wall receptacles.

No. 2502
Adjustable Floor Box

Russell & Stoll Service

Special equipment for conditions which are not met with readily available material can be had through Russell & Stoll Service. This Service also includes assistance with any unusual problems concerning receptacles and similar devices. Let our experts help you with YOUR problems.



Combination as Illustrated

Catalog No. 3000

Height, 6 inches over-all. Furnished complete or in part. Moulded composition receptacle for tandem or parallel blade plugs. Standard finish, brush brass. Heavy brass receptacle housing. Brass extension, ½ inch, standard pipe size. Lock flange of heavy brass.

Combination as Illustrated

Catalog No. 2630

Height, 6 inches over-all. Designed especially for telephone or annunciator work. Moulded composition bushing, brass extension, ½ inch, standard pipe size and heavy brass lock flange. Standard finish, brush brass. No. 1942 has ¾ inch standard pipe size extension and calls for corresponding flange No. 2620.

No. 2580 Non-Adjustable FLOOR BOX

High grade, inexpensive floor box for use in wood floors. Easily installed and can be firmly secured. Box is of galvanized cast iron; floor plate is heavy brass—gaskets make it watertight. Furnished with or without receptacles and plugs, providing for uniformity in either high or low tension installations.

Send for Supplement to Bulletin No. 52

RUSSELL & STOLL COMPANY

53 Rose Street, New York, N. Y.

Chicago Cleveland Detroit Buffalo
Philadelphia Birmingham Boston Los Angeles
Portland, Ore. San Francisco

Couch Tilting Mail Boxes

— PATENTED —

for apartment houses

Approved by U. S. Post Office Dept.

Code No. 5312. A Battery of 12 No. 53 Mail Receptacles and Frame, Closed

Code No. 533. A Battery of 3 No. 53 Receptacles Open for Deposit of Mail.

CONSTRUCTION

FRAME. Brass angle 1"x1" with inside straps for fastening in wall opening.

RECEPTACLES. Brass front with heavy leaded (non-rusting) steel boxes. All receptacles comprising a battery are factory assembled and securely riveted and strapped together. This means that the installer has no assembling, adjusting or fitting to do. He simply lifts the battery of receptacles out of the frame, fastens the frame to the wall **from the inside,** replaces the battery of receptacles and the outfit is ready for service as soon as the Government lock is attached by the local Post Office department.

FINISHES. Our standard finishes are sprayed bronze brass and sprayed dull black, both being attractive and durable finishes.

BATTERY SIZES. Not less than three nor more than twelve receptacles to a frame. All receptacles in a frame are controlled from a single Government lock furnished by the Post Office department.

TYPES. Two types are furnished, one, as shown in this adv., for use with a telephone installation, the other of like design but with top flange of frame 2½" instead of 1" and fitted with a demountable push button and speaking tube mouthpiece unit for each receptacle or partly with push buttons only and partly with push buttons and mouthpieces, as the requirement of the installation may demand.

DIMENSIONS. It is impossible to include this data here. Send for measurement data covering single, double and triple mountings.

PRICES. Telephone type (shown in this adv.) per receptacle $10.00 list. Speaking Tube type, per receptacle $11.00 list.

Manufactured by

S. H. COUCH COMPANY, Inc.

TELEPHONE MANUFACTURERS

Main Office and Factory, NORFOLK DOWNS, MASS.

SALES OFFICES

Boston	170 Purchase St.
Chicago	337 W. Madison St.
New York	76 Varick St.

SALES AGENCIES

Sierra Electric Co., Inc., 515 Market Street, San Francisco
212 Calo Building, Los Angeles
Hinckley Building, Seattle
John R. Hollingsworth, 1723 Sansom Street, Philadelphia
G. H. Steinhans, 917a Pine Street, St. Louis
D. C. Griffiths Co., Rockefellier Bldg., Cleveland
Cadillac Metal Products Co., 1444 Park Place East, Detroit
Thos. J. Stewart, 1428 Munsey Bldg., Baltimore

P & S ALL-PORCELAIN RECEPTACLES

P & S 849
Short Chain and Cord
With Shade Holder
for Glassware

Standard Porcelain Outlet Receptacles

With Porcelain Shade Holder And With Porcelain Ring
Outside Diameter 4 21/32 inches
For 3¼ and 4-inch Outlet Boxes

P & S 951
Keyless
With Ring
for Ball Lamps

P & S 921
Keyless
With Ring
for Ball Lamps

Small Porcelain Outlet Receptacles

With Porcelain Shade Holder And With Porcelain Ring
Outside Diameter 3¼ inches
For 3¼-inch Outlet Boxes Only

P & S 930
Insulated Chain
With Shade Holder
for Glassware

P & S 869
Short Chain and Cord
With Shade Holder
for Glassware

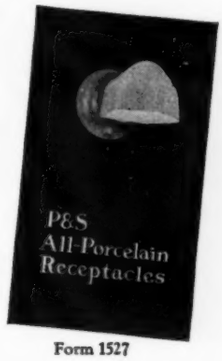
Deep Recessed Back Receptacles

With Porcelain Shade Holder
Outside Diameter 5 5/16 inches
For Loom and BX Type, Stud Boxes
The depression in the back of these Receptacles is 1¼ inches deep,
4¼ inches wide at the base and 3 inches wide
at the top of the depression.
See P & S 870

P & S 871
Keyless
With Shade Holder
for Glassware

P & S 870
Insulated Chain
With Stud Box as a Suggestion

Send for Form 1527
Complete Listing of
P & S ALL-PORCELAIN RECEPTACLES



Form 1527

PASS & SEYMOUR, Inc.

SOLVAY STATION : : : SYRACUSE, N. Y.

Know Where You Stand

By Adopting the

Standard Accounting System

This simple and accurate accounting system is endorsed by practically all of the branches of the electrical industry. It conforms with the accounting systems adopted by other electrical organizations; it is flexible and economical; it is easy to operate, accurate and quick working.

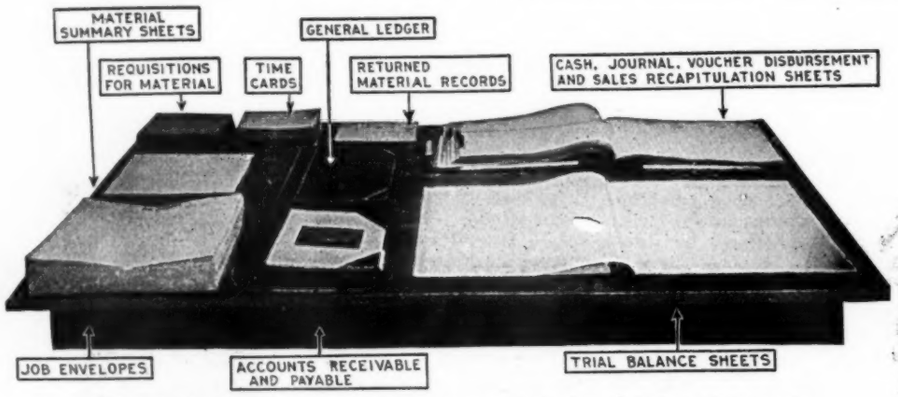
For Contractors—For Dealers
For Contractor-Dealers

Adopted and Issued by the

Association of Electragists
INTERNATIONAL

Sold to Members or Non—Members

You should always be able to answer these three questions accurately and instantly:



Here is the complete working set, just as it looks, and the whole outfit when spread out for exhibition no more than covers the top of a table.

(1) Do you know at the end of each month your net profit?

(2) Do you know that your annual inventory is accurate?

(3) Can you quickly and accurately make your income tax report from your books?

FULL INFORMATION SENT UPON REQUEST BY THE

ASSOCIATION OF ELECTRAGISTS—INTERNATIONAL
15 West 37th Street, New York City

The Business Record is recommended to contractor-dealers who do their own bookkeeping.

"CENTRAL" CONDUIT

"CENTRAL WHITE"
Galvanized

"CENTRAL BLACK"
Enameled

The Materials that Must Go In

FROM nails to locks, the contemplative builder estimates the individual cost of construction materials to get the aggregate.

The rank, important or petty, that the wiring estimate receives depends upon electragists. All-Metal Wiring with "Central" Rigid Steel Conduit will be classified with the **MATERIALS THAT MUST GO IN** if you sell building owners the permanent protection, the positive saving it brings.

To be positive, wiring safety demands wires out of sight, out of reach where tampering and altering are impossible.

The wise builder will see the logic of your All-Metal arguments. He will have confidence in you—a better realization of wiring import. He will tell his friends about All-Metal—and you. You will have greater prestige—more business—better profits.

"Central Black" enameled rigid steel conduit and "Central White" galvanized rigid steel conduit equip you to serve the ever-increasing demand for All-Metal Wiring installations.

No need to delay the job. Your jobber can furnish "Central" promptly and it reaches you ready for action, to carry through without interruptions.

CENTRAL TUBE COMPANY

PITTSBURGH

We Recommend "All-Metal" Wiring Because

It is the safest possible wiring.

It is permanent and 100 per cent. protective.

It cannot be tampered with.

It gives greatest satisfaction to the owner.

It reflects greatest credit on the contractor.

"ELECTRODUCT"

and

"XDUCT"

Ridid Steel Conduits

Use "Electroduct" and "Xduct" Because

They are proven products of quality.

They meet every requirement for particular work.

They protect the wires against mechanical injury.

They resist corrosion and defy wear.

American Circular Loom Co.

90 WEST STREET, NEW YORK

Boston Pittsburgh Chicago Atlanta Los Angeles Portland

The ALL-METAL ELECTRICAL Code

The All-Metal Code for electrical wiring—where it exists at present—its possibilities for general adoption.

THE ALL-METAL CODE

ELECTRAGISTS, during their Twenty-fifth Annual Convention last month, reviewed the progress made by them as an associated group since the start of their National Association; and in setting a standard for the membership and for all contractors, the Association has made no move of greater importance or of more far-reaching effects than its advocacy of the All-Metal Wiring Code.

All-Metal–since its inception at the Annual Convention at Washington in 1923–has made remarkable progress and is in force today in 40 leading cities (on a complete All-Metal basis) and in 285 cities (with All-Metal Zones). It is steadily spreading to all parts of the country and it is safe to say that no city that once adopts All-Metal would go back to any other standard.

But the continued growth of the All-Metal movement is dependent wholly upon the contractors of the country and the way in which

THE ALL-METAL CODE

they work for its success. In all of your dealings with the public–with customers and prospects–sell them the All-Metal idea. Stress the SAFETY its adoption guarantees, its permanence, its protection against "tinkerers", the ease with which additions or extensions can be made by a competent contractor, etc. Make your bid based on All-Metal a strong selling argument for this modern type of work; be sure that your customer knows all its advantages and its superiority over other and possibly cheaper systems.

On the following page will be found a list of cities completely "All-Metal" (the list of places having All-Metal Zones was published in the June ELECTRAGIST). Study these lists, show them to your customers. Write to the manufacturers of conduit, cable, fittings, etc., for facts that will fit you to take an active part in this progressive, wanted and needed development–the greatest advance in wiring work the Industry has ever known.

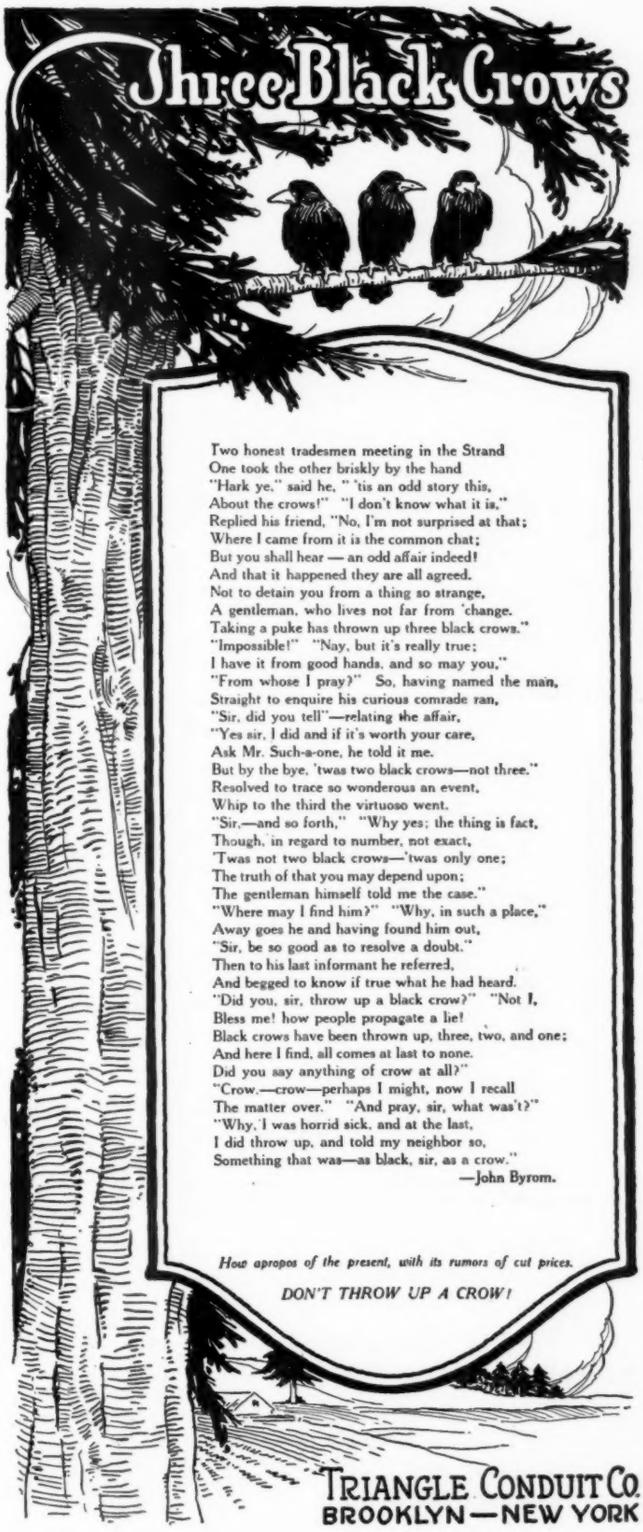
THE ALL-METAL CODE

ALL-METAL Electrical Wiring is in force today in the cities shown below; they are on a complete All-Metal basis.

Los Angeles, Calif.	Brookline, Mass.
Mill Valley, Calif.	Malden, Mass.
Colorado Springs, Colo.	Waltham, Mass.
Denver, Colo.	Minneapolis, Minn.
Englewood, Colo.	Omaha, Neb.
New Haven, Conn.	Atlantic City, N. J.
Washington, D. C.	Alexandria Bay, N. Y.
Atlanta, Ga.	Avon, N. Y.
Berwyn, Ill.	Fleishman's, N. Y.
Chicago, Ill.	New York, N. Y.
Evanston, Ill.	Oneonta, N. Y.
Highland Park, Ill.	Rochester, N. Y.
Maywood, Ill.	Staten Island, N. Y.
Peoria, Ill.	Wilkes Barre, Pa.
Waukegan, Ill.	El Paso, Tex.
Winnetka, Ill.	Norfolk, Va.
Evansville, Ind.	Cedarsburg, Wis.
Valpariso, Ind.	Janesville, Wis.
Sioux City, Ia.	Milwaukee, Wis
Louisville, Ky.	Casper, Wyo.

There are, in addition, hundreds of cities having "All-Metal Zones."

THE ALL-METAL CODE


Three Black Crows
Two honest tradesmen meeting in the Strand
One took the other briskly by the hand
"Hark ye," said he, " 'tis an odd story this,
About the crows!" "I don't know what it is,"
Replied his friend, "No, I'm not surprised at that;
Where I came from it is the common chat;
But you shall hear — an odd affair indeed!
And that it happened they are all agreed.
Not to detain you from a thing so strange,
A gentleman, who lives not far from 'change.
Taking a puke has thrown up three black crows."
"Impossible!" "Nay, but it's really true;
I have it from good hands, and so may you,"
"From whose I pray?" So, having named the man,
Straight to enquire his curious comrade ran,
"Sir, did you tell"—relating the affair,
"Yes sir, I did and if it's worth your care,
Ask Mr. Such-a-one, he told it me.
But by the bye, 'twas two black crows—not three."
Resolved to trace so wonderous an event,
Whip to the third the virtuoso went.
"Sir,—and so forth," "Why yes; the thing is fact,
Though, in regard to number, not exact,
'Twas not two black crows—'twas only one;
The truth of that you may depend upon;
The gentleman himself told me the case."
"Where may I find him?" "Why, in such a place,"
Away goes he and having found him out,
"Sir, be so good as to resolve a doubt."
Then to his last informant he referred,
And begged to know if true what he had heard.
"Did you, sir, throw up a black crow?" "Not I,
Bless me! how people propagate a lie!
Black crows have been thrown up, three, two, and one;
And here I find, all comes at last to none.
Did you say anything of crow at all?"
"Crow,—crow—perhaps I might, now I recall
The matter over." "And pray, sir, what was't?"
"Why, I was horrid sick, and at the last,
I did throw up, and told my neighbor so,
Something that was—as black, sir, as a crow."
—John Byrom.
How apropos of the present, with its rumors of cut prices.
DON'T THROW UP A CROW!
TRIANGLE CONDUIT CO.
BROOKLYN—NEW YORK

Do You Remember This?

TWO years ago, when we first had this made up, the industry was indulging in an orgy of price cutting. Every one mistrusted everyone else and the "other fellow" was always the pirate.

Everyone's failure was confidently (and confidentially) predicted within the week. Well, most of us are still here, and doing business, and now, with the demand brisk, moderate and stable increases are the vogue.

Building prospects are good and the contractor who continues to do the best job and takes a fair profit can sleep well o'nights.

The Triangle Conduit Co. will continue to adhere to its policy of manufacturing the best possible materials for wiring — present stocks will be maintained and amplified, and jobbers will be kept in a position to satisfy the demands of their customers.

Yours for stability and progress.

THE
Triangle Conduit Co., Inc.

Factories:
BROOKLYN, N. Y. CHICAGO, ILL.
General Offices:
Dry Harbor Road & Cooper Ave.,
Brooklyn, N. Y.

"Making it easy for the contractor"

Here Is a Big Seller for the Contractor in Industrial Plants

Motor Starting

These Motor Starting Switches list at $1.82 each, subject to a good discount and are ideal on lighting circuits and small motor driven machinery.

The contractor who is alive to the value of this can make many a sale in Industrial Plants and can use them in many places in his installations. There is an infinite number of uses for this **"CIRCLE T"** Tumbler Type Switch.

Be sure to get a copy of Circular No. 2 listing our entire line of Motor Starting Switches.

The Trumbull Electric Mfg. Co.

PLAINVILLE, CONN.

NEW YORK
114 Liberty Street
BOSTON

CHICAGO
2001 W. Pershing Road
PHILADELPHIA

SAN FRANCISCO
595 Mission Street
JACKSONVILLE

PORCELAIN

Porcelain Safety Economy Permanence

Wiring Jobs properly done are permanent.

We manufacture the entire line of Porcelain Insulations.

GENERAL PORCELAIN CO.

Parkersburg, West Virginia

"Wonder" Cold Pipe and Tubing Benders

Do not Crack, Flatten or Crimp the Pipe. Standard of the World. Hand and Motor Operated.

14 SIZES OF MACHINES.

What it costs to bend pipe our way, per bend:

1-inch pipe, 5c
2-inch pipe, 10c
4-inch pipe, 25c
6-inch pipe, 60c
8-inch pipe, $1.00

American Pipe Bending Machine Company

61 PEARL ST., BOSTON, MASS.

Send for Catalogue.

NO MEASURING OR SAWING

FOUR NAILS AND A HAMMER SETS THE BOX ALLOWING FOR LATH AND PLASTER.

ANY MAKE OF BOX CAN BE USED.

Our "ALL IN ONE" Covers are something new and saves carrying a variety of covers in stock.

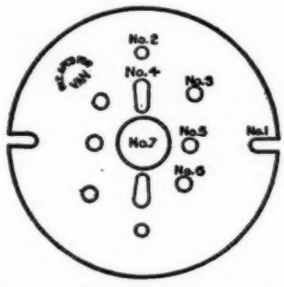
HAVE VANDY EXPLAIN TO YOU WHY HIS FITTINGS COST YOU NOTHING.

ASK YOUR JOBBER.

Manufactured By

B. A. VANDY

187 No. Water St. ROCHESTER, N. Y.



NEW

Six and Eight tube "SUPER-HETS"

are stirring a buying market

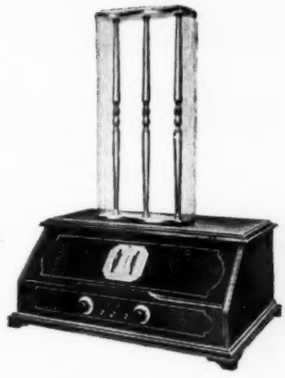
Radiola 28, "Jefferson desk" type new RCA uni-control, eight-tube Super-Heterodyne with attached loop. As dry battery operated receiver, gives volume in excess of that obtainable from storage battery operated receivers. Space inside cabinet for all dry batteries.

If used with Radiola Loudspeaker Model 104, Radiola 28 operates completely from 60 cycle, 110 volt A. C. lighting circuit, eliminating all batteries. Tuning mechanism consists of new RCA uni-control system employing "straight line" frequency condensers giving equal spacing of all stations on tuning scale. List price, including 7 Radiotrons UX-199, 1 Radiotron UV-877 and 1 Radiotron UX-120. $260.

VOLUME! Tone! Fine appearance. And all the performance of a Radiola Super-Heterodyne. Add to these the new uni-control operations and other refinements—and you have a vigorously reawakened radio market.

Surveys of the past year have shown that the one set most asked for by prospective buyers was the Super-Heterodyne. Now everyone is asking to see and hear the *new* Super-Heterodyne. If you have it there to show, you have a self-made sale.

Ask the nearest RCA distributor for catalog describing all the new Radiolas and Radiola Loudspeakers and Radiotrons. Get in line for radio's biggest autumn season!



Radiola 25, new RCA six-tube uni-control Super-Heterodyne, table type with attached loop. Dry battery operated with space in cabinet for all necessary batteries. If used in conjunction with Radiola Loudspeaker Model 104, Radiola 25 operates from 60 cycle, 110 volt A. C. lighting circuit, requiring no batteries.

Tuning mechanism consists of new RCA uni-control system employing "straight line" frequency condensers giving equal spacing of all stations on tuning scale. List price, including 5 Radiotrons UX-199, 1 Radiotron UV-877 and 1 Radiotron UX-120 . $165.

RCA-Radiola

MADE BY THE MAKERS OF RADIOTRONS

RCA

Creating new loudspeaker standards

Plug in the new RCA Cone type Loudspeaker Model 100 on any good set. One hearing will sell you—one hearing will sell any customer. It is clear-toned—true in every range of tone, high or low. List price $35.

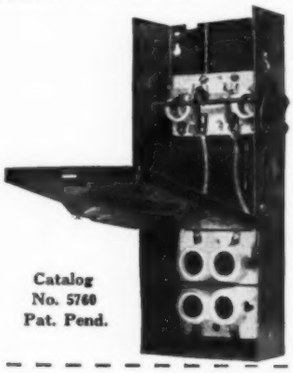
RADIO CORPORATION OF AMERICA · · · NEW YORK · CHICAGO · SAN FRANCISCO

BARBER

Meter Testing Safety Switches

Barber Switches make a clean cut installation, they stand up, they meet all specifications—and there is a Barber Switch for practically every entrance requirement. Our new meter switch (shown above) is most adaptable: box can be furnished in 3 wire main switch with grounded neutral, 2 pole straight through or for polarized work. Contractor can quickly make the box 1-2 pole circuit, 2 single pole circuits, 2-2 pole circuits or 4-5 circuits. Accessible, easy to wire, plenty of knockouts.

Our Safety Switch Bulletin shows the complete Barber Line. It gives prices, specifications and other necessary information. You will find some helpful information in this bulletin and we'll be glad to send you a copy if you'll just fill in and mail the coupon below.



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Catalog No. 5760 Pat. Pend.

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"Makes the Job Look Right"

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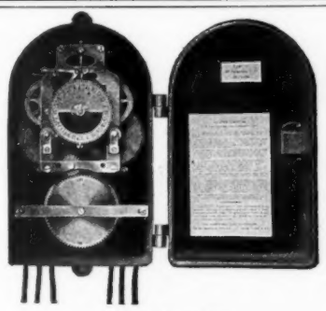

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"UNCLE SAM" Uses Them Extensively.

Large Industrials Will Use Nothing Else.

Central Stations Have Considered Them Standard Practice for Twenty-five Years.

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There Is A Hartford Time Switch In Just the Right Type And Capacity for Every Time Switch Purpose.

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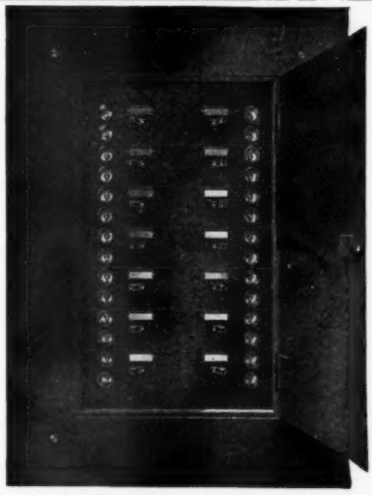

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STEEL CABINETS

KNIFE SWITCHES

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WM. WURDACK

ELECTRIC MFG. COMPANY

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Made in both open and closed face.

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AUTOMATIC TIME SWITCH

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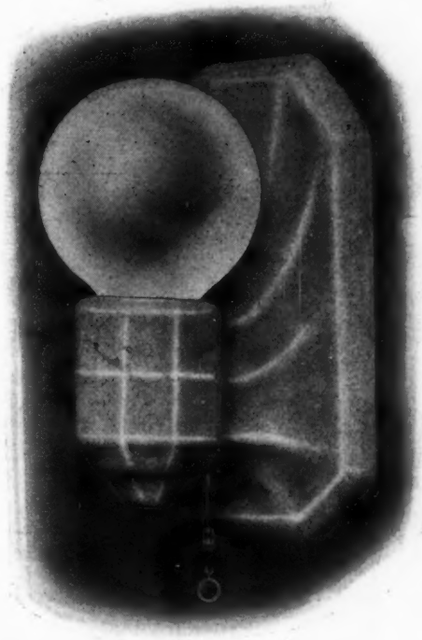

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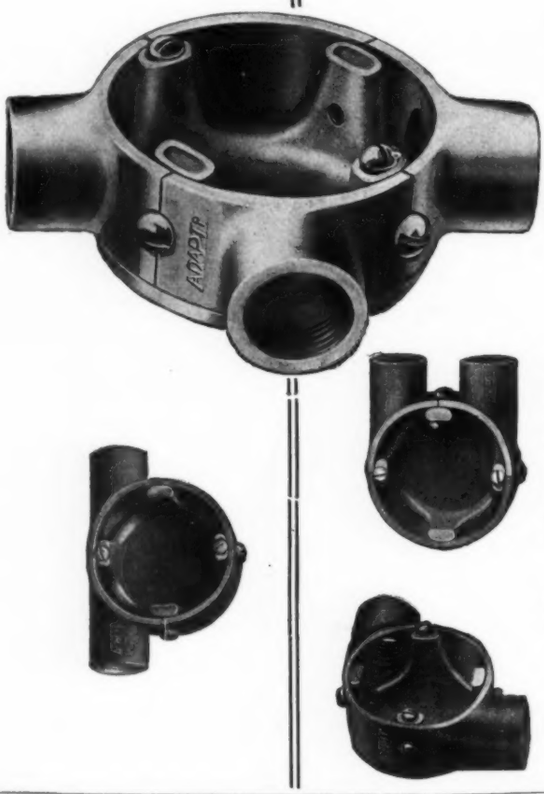

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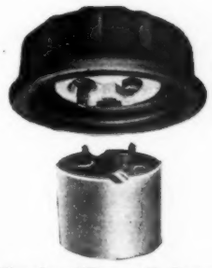
Easily Wired—Easily Installed



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— FOR —
ALL-METAL WIRING

Clifton Rigid Conduit is a perfect product to use for All-Metal installations. It is made from steel pipe of highest quality and is thoroughly enameled or galvanized to prevent corrosion. Its sharp, clean threads and smooth interior save time and effort for the men who do the work. Get behind the All-Metal movement and let CLIFTON CONDUIT help you to make it a sure and scund success.

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Entrance Cap

Approved by
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For either vertical or horizontal installation

Eliminates duplication of stock

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THREE HOLES FOR WIRES

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PARANITE

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The Standard for THIRTY-FOUR Years

For all purposes. Inside, Outside, Aerial, Underground and Submarine Use.

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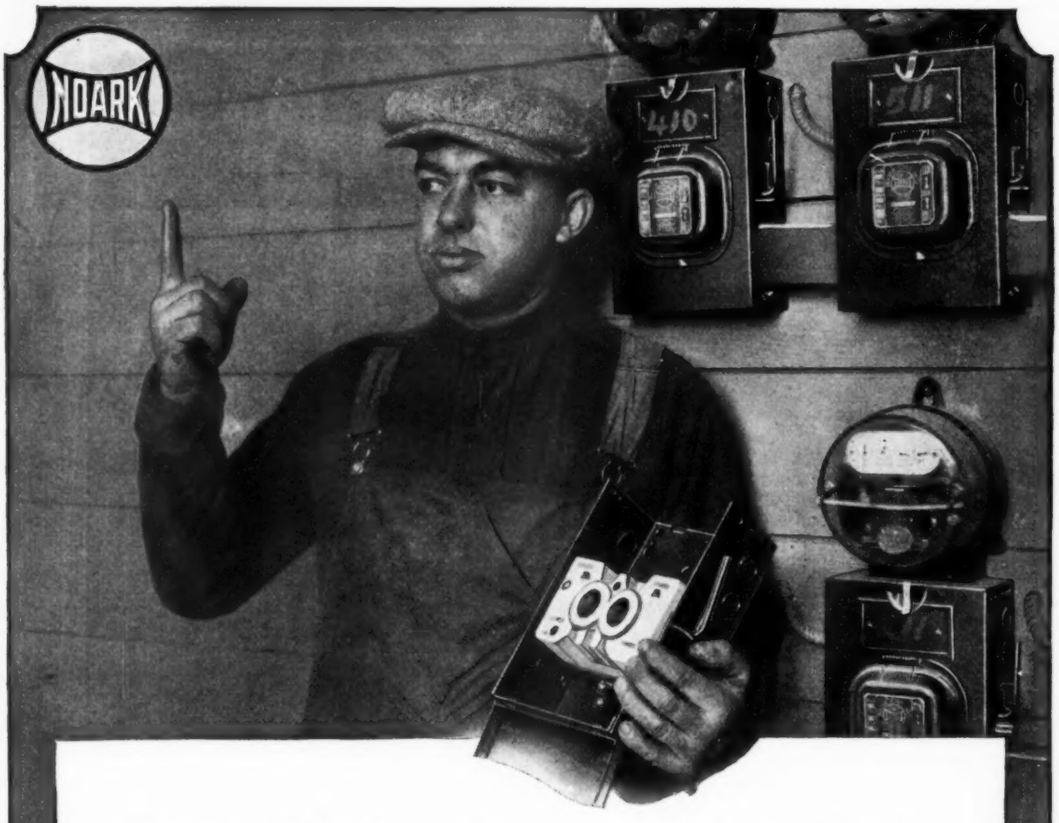

Only ONE unit to install—*that's where the contractor gets an advantage*

WHAT the customer wants is a safe service entrance and meter service installation that will afford maximum protection to his interests.

That is what the Central Station, the Underwriters, the State and the Contractor, all want.

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1 NOARK Fuses

2 NOARK Fuse Clips and Bases

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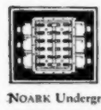

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Type "FS" Unilet, 2-gang with Cover for Toggle Switches

Type "SE" Unilet with Pony Receptacle

Type "T" Unilet with "Unitap" Connection Block

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THE "Circle surrounding the F" also serves to surround your wiring device needs—to give you a Circle F product for every requirement and every job.

In wiring different types of buildings—from the cozy little cottage to the towering temple of commerce—you will find Circle F Devices a big help in the work. The enduring quality that has been built into these devices shows in their never-failing service. Once in the job, they stay "on the job."

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105-T

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Long Island City, New York

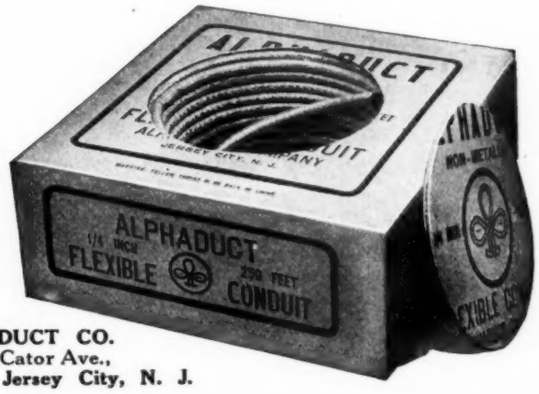
For Service and Dependability

WIRING DEVICES

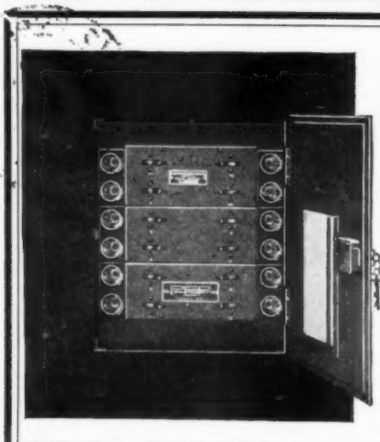
CONSULT AGENCIES

E. R. BRYANT
Congress St., Boston, Mass.
W. A. LEISER & CO.
1607 Sansom St., Philadelphia
A. I. CLIFFORD CO.
Odd Fellows Bldg., Indianapolis, Ind.
SAGE & HEARL
208 N. Canal St., Chicago, Ill.
J. F. MEYN
406 Mutual Bldg., Kansas City, Mo.
A. S. DE VEAU
53 Park Place, New York
S. H. STOVER & CO.
Century Bldg., Pittsburgh, Pa.
POPKIN BROS.
Madison Theatre Bldg. Detroit, Mich.
J. P. LANE
Chemical Bldg., St. Louis, Mo.
ELECTRICAL SPECIALTY CO.
San Francisco, Los Angeles, Seattle

Trenton Electric & Conduit Co., Inc.
Trenton, New Jersey



ALPHADUCT CO.
136 Cator Ave.,
Jersey City, N. J.



PLAINVILLE PRODUCTS

Switchboards
Panelboards
FuseReducers

PLAINVILLE ELECTRICAL PRODUCTSCO.

"DETROIT" RUBBER COVERED WIRES

(Reg. U. S. Pat. Office)

RUBBER INSULATED WIRES AND CABLES
LEAD ENCASED RUBBER INSULATED WIRES AND CABLES
For every electrical purpose.

DETROIT INSULATED WIRE CO.
DETROIT, MICH.

NATIONAL PRODUCTS

SHERARDUCT
***and* ECONOMY**
RIGID CONDUIT

FLEXSTEEL
Flexible Conduit
Armored Cable

OVALFLEX *flat*
Armored Cable

FLEXTUBE *"Loom"*

NATIONAL BRACKETS
METAL MOLDING
The Orginal Surface Raceway

LIBERTY WIRES
Cable and Cords

OUTLET *and*
Switch Boxes

CONDUIT FITTINGS

THE Equitable Building, Seventh Ave., New York, requires something more than 255 miles of SHERARDUCT Rigid Conduit for the protection of its wiring systems.

One block away, a modest little storeroom uses a little less than ninety feet for the protection of its systems.

Between these two extremes, the National Metal Molding Company supplies hundreds of great public buildings and thousands of homes, stores and factories with one or another of its Wiring Products.

Ranging from SHERARDUCT, a rigid conduit that will last as long as the building in which it is installed, down to a piece of FLEXTUBE that winds its way through the joists in your cellar, there is a National Product for every possible wiring need.

More than 20 years have been spent by National Metal Molding Company in patiently developing and perfecting Conduits, Cables and Wiring Systems. From beginning to end, every process of fabrication and manufacture is under one control and one system of inspection and in addition to a large organization, trained to build quality into National Products, a staff of expert research men constantly study ways and means of making electrical wiring systems safer and better.

Send for free book "Better Wiring for Better Lighting"

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National Metal Molding Co.

1545 Fulton Building
Pittsburgh, Pa.
Represented in all Principal Cities

(143)

An Offer That Means Money to YOU!

Send This Coupon with $1 10 and get Our Special Introductory Offer of three

Mutual Electric & Machine Company,
Detroit, Michigan.

Enclosed please find $10.00. Send me your set of BULL DOG Safety FUSENTERS with the understanding that if I am not thoroughly satisfied I can return the set and receive my money back.

Name _____

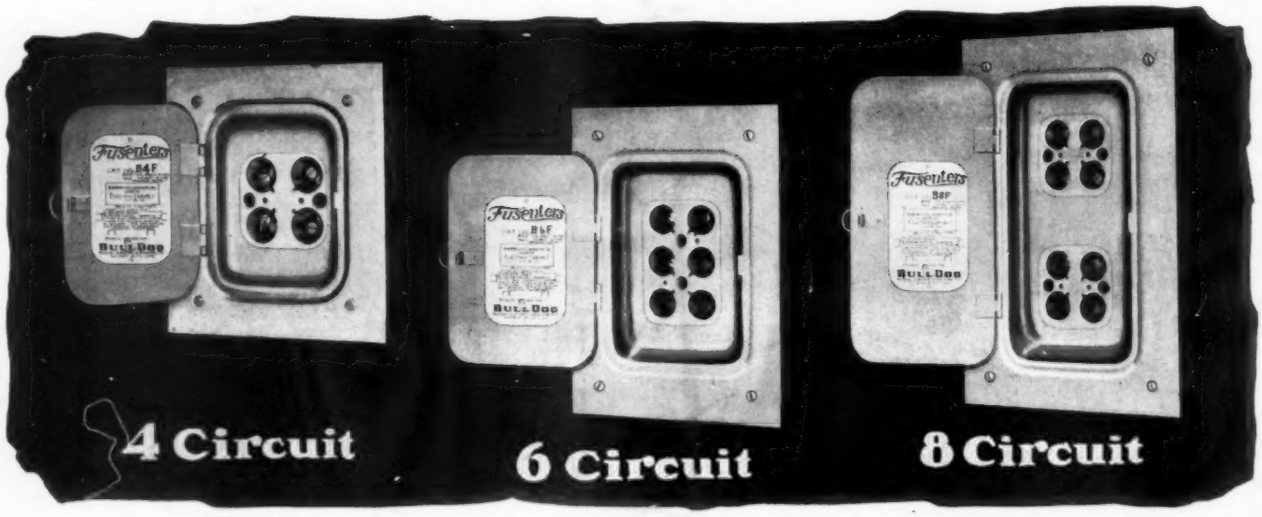
Address _____

I buy from the following jobbers_____

_____

_____

BULL DOG SAFETY Fusenters! (FUSE CENTERS)



Here's Why They'll Build Profits for YOU:

BULL DOG FUSENTERS do away with stumbling into dark cellars and out-of-the-way closets to replace a fuse. The danger of standing on a damp basement floor to replace fuses and the possibility of starting a fire with a hastily-thrown match are eliminated. Every home owner, every prospective builder is being told this story vividly through advertising in popular, trade and technical publications. When people know that compact, attractive BULL DOG Safety FUSENTERS with their beautiful LUMINIZED finish and mounted flush in the wall, can be placed in any room, hall or stairway of any building where it's most safe and convenient to replace fuses, they're going to demand them. And when they learn that BULL DOG FUSENTERS cost less than the oldtime fuse boxes and panel boards they will have no other equipment. Will you be ready to meet that demand?

Bull Dog Quality

BULL DOG Safety FUSENTERS are of the same high quality that has characterized BULL DOG Safety Switches and made them standard in the industry. You are insured against spurious products by patent applications, registrations and trademark on BULL DOG Safety FUSENTERS. Listed as Standard by Underwriter's Laboratories.

STANDARD PRICES F. O. B. JOBBERS WAREHOUSES ANYWHERE IN THE UNITED STATES

One Fuse Per Circuit			Net Prices			Steel Box Dimensions		
No. Circ.	Cat. No.	Std. Pkg. Qty.	Std. Pkg.	Less Std. Pkg.	Wgt. Std. Pkg.	High	Wide	Deep
4	B4F	25	$2.25	$2.50	165 lbs.	7"	6"	3"
6	B6F	25	3.50	3.75	260 "	10½"	7"	3"
8	B8F	10	5.50	5.75	150 "	13"	8"	3"
12	B12F	5	8.00	8.50	83 "	12"	10½"	3"

Less 5% for Cash.

MUTUAL ELECTRIC & MACHINE COMPANY = DETROIT, MICHIGAN, U. S. A.